This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

+ *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.

+ *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.

+ *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.

+ *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at `http://books.google.com/`

The Arthur and Elizabeth
SCHLESINGER LIBRARY
on the History of Women
in America

MARRIAGE AND PARENTAGE

AND THE

SANITARY AND PHYSIOLOGICAL LAWS

FOR THE

PRODUCTION OF CHILDREN

OF

FINER HEALTH AND GREATER ABILITY.

BY

A PHYSICIAN AND SANITARIAN.

THE VIRTUES OF MEN AND WOMEN AS WELL AS THEIR VICES MAY DESCEND TO THEIR CHILDREN.

NEW YORK:
M. L. HOLBROOK & CO.
1883

392.6
H71m

COPYRIGHT
BY M. L. HOLBROOK,
1882.

78-0220

THERE IS NOTHING UTOPIAN
IN HOPING FOR THE TIME TO COME WHEN
MEN AND WOMEN WILL CONSULT A WISE SANI-
TARIAN BEFORE ENTERING INTO THE
MARRIAGE RELATION.

CONTENTS.

PAGE.

CHAPTER I.

INTRODUCTORY, COMPRISING A SKETCH OF THE GREAT IMPROVEMENTS IN THE MARRIAGE RELATIONS WITHIN HISTORIC TIMES 3

CHAPTER II.

THE DUALITY OF THE SEXES, AND REASONS FOR MARRIAGE 12

CHAPTER III.

THE FUNDAMENTAL PRINCIPLES ON WHICH TRUE MARRIAGES ARE BASED 18

CHAPTER IV.

THE TEMPERAMENTAL AND EDUCATIONAL ADAPTATION OF ONE PARTY TO ANOTHER 22

CHAPTER V.

HEALTH AS THE MOST IMPORTANT FACTOR IN A SANITARY MARRIAGE 31

CHAPTER VI.

PHYSICAL CULTURE AS AN ELEMENT IN MARRIAGE . . 46

CHAPTER VII.

MARRIAGE AMONG THE ANCIENT SPARTANS AND ITS LESSONS FOR MODERN CIVILIZATION 53

PAGE.

CHAPTER VIII.

How Science is applied to improving animals and plants, and may be applied to improving the race 61

CHAPTER IX.

The Mixing of Races and its importance . . 73

CHAPTER X.

The Difficulties which are encountered . . 83

CHAPTER XI.

Importance of rearing Children, especially good and healthy ones, and the disadvantages of rearing sickly or bad ones 106

CHAPTER XII.

Reproduction, its nature and laws 113

CHAPTER XIII.

Why and how parents transmit good and bad qualities to their offspring 121

CHAPTER XIV.

The laws of Sanitary parentage 142

PREFACE.

If the average standard of ability of the race in intellect, in morals, and in physical power were raised one degree during each century, the results could hardly be estimated. We should, in a comparatively short time, get rid of our thieves, our robbers, our drunkards, the licentious, the feeble and insane, and we should have so many more able men and women than now—far abler than any the world has yet produced—that life, which, with all its drawbacks, is well worth living, would be still grander and better. It seems to the writer desirable that this should be the case. It may, in part, be accomplished by education, by moral culture, and by the gradual processes of evolution, but these agents are too slow, and do not reach all the conditions of life. Education has done much for human advancement, but it also trains accomplished rascals as well. Evolution may go backward as well as forward. It seems to me the race might be greatly improved by wiser and more sanitary marriages, and by more physiological parentage. We live in a time when our greatest men are not equal to the questions of the hour. They cannot grapple with them successfully. There is great

danger that if relief does not come by the birth of abler men than any we have, civilization will suffer deterioration. There are many who will object to the application of the laws of breeding, even so modified as to be applicable to human beings without being in any way unfavorable to the marriage relation as it now exists, but the duty we owe to the future should inspire us to overcome any such objection, and especially when the harvest which may be reaped is so great. Indeed it is not in the least necessary to disturb or destroy marriage and parentage, but only to improve and make them more in accordance with scientific knowledge. It is in a humble way to point out how this may be done without disturbing our social arrangements that this book has been written. With the sanguine hope that the work may be beneficial in its influence I send it on its mission to all who are able to receive and profit by it.

MARRIAGE AND PARENTAGE.

INTRODUCTION.

CHAPTER I.

SANITARY marriage and sanitary parentage are subjects of deep concern to every human being. They have a direct bearing upon human progress, health and happiness. Marriage itself is a theme which both old and young never tire of contemplating. It is a subject of infinite jest, of much thoughtfulness, often of great joy or sad memory. The human race is yet too imperfectly developed and ignorant to be capable of forming only perfect marriages, and this will continue to be so as long as ignorance of natural law, intemperance, licentiousness and crime abound. These interfere in a most marked manner with sanitary marriage and parentage, and, alas, too often make only a sad and sorrowful slavery for one or both parties. In the animal kingdom, nature has a more perfect work, and here marriages are more harmonious; but the life of animals is not so complex as that of man,

and so it is an easier matter for them to settle wisely their marital relations. Almost any mating is good enough for birds and beasts. They have no vices to mar the family life. No robin comes home late at night to turn his home into a bedlam. There may be fierce contests between the males for the possession of a female, but this results in good, for it brings together the strongest males and the most beautiful and perfect females, and these produce a superior offspring to what would have been produced had there been no contest, and the feeble and less perfect had found it easy to secure the finest female. With man the case is very different. With him marriage is a complex matter, for it involves so many faculties, so many likes and dislikes, such varied educations, such temperamental and physical differences, so many imperfections of body, so much ill health, such ancestral differences. These questions do not seriously concern animals; but they make marriage among human beings a very grave matter, far too much so for the knowledge we now possess.

If we turn back the pages of history, we find that marriage is to-day a very different thing from what it was in ancient times. Formerly in Great Britain polyandry existed, ten or twelve families dwelling together under the same roof, and having wives in common. Brothers, fathers and sons allied with each other in the partnership of their wives. It was not until about the year A. D. 78 that in England legitimate marriage was

acquired as one of the privileges of citizenship. From that time on there has been a gradual change for the better. In A. D. 450, the wife was generally bought for money, or a consideration, although her consent was required.

About the year 600, the church modified the marriage laws, forbade a man to marry his first cousin or stepmother, discouraged second and third marriages, and permitted divorce for adultery. In A. D. 1100, secular marriages were forbidden, and so were consanguineous ones. In 1500, wives were confined closely to domestic labors and duties. During all of this time the wife could be punished by the husband, and it was not until 1660 that this privilege, hardly yet entirely extinct in England, began to be doubted by the courts. In 1714, parents could compel their daughters to marry whom they wished, and often did it.

If we investigate the marriage customs of other countries we find a similar condition existing. Among the ancient Mexicans it was next to impossible to contract a marriage, except in conformity with the wishes of the parents. The common people generally were content with one wife, but chiefs and kings had several. Concubinage was lawful. A stricter fidelity was exacted of the wife than of the husband. Divorce was disapproved of as dishonoring the parent who formed the alliance, but the husband could put away a bad or slovenly wife. In Yucatan, fathers placed the negotiations for the mar-

riage of their children in the hands of matchmakers, and the sons-in-law were required to serve five or six years for their wives in the father-in-law's house. In Chibachas, South America, every man married as many wives as he could, and treated all as slaves. "In Honduras," says Herera, "if a man wanted a wife for his son he sent an old man with presents to ask for another man's daughter, and that messenger gave a long account of the actions of the bridegroom's ancestors and of his good qualities to the bride's father. If the presents sent were received, they all got drunk together. The next day the bride was wrapped in a colored mantle and carried by turns on the shoulders of men who went singing and dancing to the bridegroom's home. They stopped and drank at every brook. A great reception was given in every town through which they passed. When he who carried her became weary, others took her up, and continued on in the same manner though it were twenty leagues. During all of this time the bride never showed her face; but when she arrived at the bridegroom's house, women took her and bathed her in water in which flowers had been boiled, shut her up three days, after which she was given to the bridegroom, when all got drunk, and scenes too fearful to mention were enacted under the name of rejoicing."

In ancient Peru, every year, or every two years, the king ordered all of the marriageable ones of his family to meet, when he gave them away in marriage as he

deemed fit, and ordered the same to be done by appointed officers throughout his whole kingdom.

In the south of Africa there is a race of men who are famous the world over as the finest representatives of any of the uncivilized races of the globe. They are known as Kaffirs, and the Zulu tribe is the chief, or most imporant of them. English civilization is doing its best to degenerate them, and perhaps, in a few generations, their characteristics will be so changed as to be hardly recognizable. The young men are very swift of foot and possess enormous endurance. Travellers often employ them as letter-carriers, and they will take a gait half run and half trot and keep it up almost without cessation for fifty or sixty miles. Their constant activity and temperate mode of life maintains them in perfect health. The young women are as remarkable for the beauty of their forms as the young men for the strength of their limbs, and these are shown off to the best advantage by the very slight clothing which they wear. Some young Kaffir girls are said by travellers to be so perfect in form that they would satisfy the most fastidious tastes of the classical sculptor. The methods by which marriages are contracted between the young men and women, as related by visitors, are very interesting. The former are made to pass in review, in the costume provided for them by nature, before the girls, and to perform various feats, such as running, dancing and jumping. They are put to severe tests of strength and skill,

and rarely will a young girl marry one of these young men if he proves to be deficient to any marked degree in physical development and bodily vigor. After marriage, the woman becomes a slave to her husband, and is kept on a scanty supply of food, and soon grows old and looks like a hag; yet at this supreme moment she is master of the situation, and does not fail to make the most of her opportunity. Having an eye for beauty, and recognizing as well as any artist can his physical imperfections, she chooses her future mate more fully in accordance with the rules of sanitary marriage than any uncivilized race of which we have any knowledge. Indeed, the fine physical development of these Kaffirs is in some degree dependent on it.

Quite different is it among the peasants of Bengal. I. Talboys Wheeler says that the girls are provided with husbands about their 11th year. Mothers are very anxious on the subject, and think it a shame to delay so important a matter longer. If the father is poor he may be obliged to borrow money at a high rate of interest to pay for all the expenses. A professional matchmaker is engaged who knows every family round about and their genealogies, and to him is entrusted the seeking of a suitable husband in the neighboring villages. Lengthy negotiations are entered into, horoscopes are compared, the heavenly bodies are consulted, and when the matter is settled a day is fixed for the nuptial ceremonies. The groom has no voice in the choice. He is content to take

the bride chosen by his parents without any courtship whatever. Indeed, when a marriage is arranged among Bengalists, it is considered most improper for the bridegroom to see or to speak to his intended until the wedding day. Often the bride is too young to understand even the meaning of marriage, and only knows that there is to be some great ceremony, and after it festivities lasting many days.

Another example of rare interest is furnished us by the marriage relations found to exist among the Esquimaux, a people perhaps more than any other devoid of sentiment, and living in a most primitive condition. John R. Rae, who lived among these barbarous uncultivated races for a long time, while searching for the relics of the ill-fated Sir John Franklin, has given a very interesting account of their marriages. According to him there are no preliminary wooing ceremonies among them, and hardly anything like love is known. The relation of husband and wife is purely a matter of convenience. The woman requires food and the man needs some one to make his clothing and to take care of his dwelling while he is hunting. Marriages are usually contracted while the interested parties are in infancy. The father of the boy selects a little girl who is to be his daughter-in-law, and pays her father something; perhaps it is a snow-knife, a handful of powder and a dozen percussion caps. The children are then affianced, and when they become of proper age, live together. The

wife has her face tattooed with lamp-black, and is considered a matron in society. Marriage with them is not the sacred institution of civilization, and exchange of wives is of frequent occurrence. If a man who is going on a journey has a wife who is encumbered with a child that would make travelling disagreeable, he exchanges with some other man who is to remain in camp and has a wife with no child to act as an incumbrance. Sometimes the man will want a younger wife to travel with him, and in that case he effects an exchange, and sometimes such exchanges are made for no special reason, as horses are exchanged among farmers. Among friends it is a usual thing to swap wives for a week or two. Unmarried men who are going on a journey have no difficulty in borrowing a wife for the time being, or perhaps buying one altogether. Intermarriages are common, and, everybody is related to everybody else, in a most intricate and astonishing manner; but this does not disturb the phlegmatic Esquimau in the least. Indeed, it may be mentioned here that consanguineous marriages are common among a large portion of the uncivilized, and to some extent civilized, races of the globe.

From what has been given it may be seen that marriage has become more perfect as civilization and humanity have advanced. It becomes the question now how much farther it may be improved, and the question arises in the thoughtful mind whether the next step shall not be to render marriage sanitary and physiological, and whether

there is not here room for an improvement greater than any which has yet been made. It will be the aim of future chapters to throw some light on this as yet neglected and obscure subject.

CHAPTER II.

THE DUALITY OF THE SEXES AND THE OBJECTS OF MARRIAGE.

It would be interesting to study in detail the reasons for two sexes. In the second chapter of Genesis a general statement is made, that "it is not good that man should be alone: I will make him an help meet for him." No one can fail to see in this condensed paragraph a great and striking truth.

There appears to be an old belief that man was originally hermaphroditic. The Jewish Talmudist, taking the Hebrew noun in the Pentateuch in its individual and not in its collective sense, held this view. Scientific writers have hinted that man was originally unisexual. We have occasional returns to hermaphrodism in the production of a being having both sexes united in the same individual. In the lower animals it is not so rare. More than one anatomist has held that in its early state the fœtus is hermaphrodite. In plants, and in a few of the lowest animals, both sexes in one individual is, indeed, preferable; otherwise, the two might never, or rarely, meet for propagation.

Herbert Spencer, in his First Principles, and also in his

Biology, gives as a reason for two sexes the fact that the union between the sperm and germ elements is more complete because they differ; that in chemical unions, two substances of a similar nature do not form chemical compounds so naturally and perfectly as where the substances are unlike. According to his theory, two persons very similar in their organizations and temperament are less likely to be prolific than if they possessed marked differences. Darwin thinks the objects of the two sexes are to secure a change and to prevent continual in-and in breeding. Alford Henry Huth, in his excellent and instructive work on "The Marriage of Near Akin," gives still further arguments in favor of duality, and says :— "There is obviously a great advantage in this division of the sexes : what is this advantage ? In the higher animals it is obvious enough ;—power of attack by the male, while the female protects her offspring. A gain in the locomotive power, and reduction of bulk, are in themselves sufficient to account for the change from unisex to dual sex; it is a division of labor whereby the functions are better performed than were the sex undivided. In the lower animals, and even in the hermaphrodites, it is a division of labor; for do we not see that the higher an organism is developed, the more specialized are its various parts; that the simple functions of the lowest organisms are divided in the higher ? It would be strange indeed if the reproductive organs alone remained unchanged and undivided. If there is any physiological gain in the differentiation of

the various cells which make up the digestive canal of the higher organizations, or if there is any gain in the division of function between the skin, lungs, and the kidneys, surely there must be a gain in the division of the organs of reproduction. We see this more clearly if we compare the organism of a hive of bees. There one set of bees elaborate the wax and fetch the honey; another set build the comb and feed the young. The drones are analogous to the sperm cells of an hermaphrodite, the queen to the ova, the rest to the various accessory organs. Each chooses for itself the most suitable food, just as the cells of our organism select each a different food; and who can doubt that by thus working together they accomplish infinitely more, and do that infinitely better, than were each to work for its-self alone? In hermaphrodites there is then a perfection and saving of labor; in separate sex a greater perfection and greater saving of labor; and, doubtless, were the oxidizing and digestive functions not essential to the life of the individual, and not in constant operation, they also would be divided as the function of reproduction."

Having found reasons for duality of sex it will not be difficult to find reasons for marriage. This seems to be one of those institutions which has its foundations deeply laid in human nature. Even in the animal kingdom it has great significance. Birds and beasts mate for a longer or shorter period, mainly for the rearing of their young and the continuance of their kind. Human beings, how-

ever, live so long, propagate so slowly, and children require for so many years parental care of the highest order, that the difficulties of maintaining the race in any but perhaps the most favored climate would be so great they could hardly be overcome without permanent marriages and these become all the more important on account of the division of labor in the marriage relation, which gives mainly to man the duty of providing the means of support, of defence against enemies, of leaving home in war to defend his tribe or country, and to women the duty of caring for the household and the family, and such lighter labors as are suitable to her strength. And this condition is not materially altered by the fact that, in some countries where men are in a state of almost constant war, women do much of the hard labor which really men ought to do.

As civilization has advanced, and wealth increased, and man desires comfort, culture, peace and happiness, still other reasons may be added to those which have been mentioned. One is the founding of a home free from the intrusion of the world, where men and women may share together the fruits of their industry, and gain strength for the struggle for existence which never fails to be an important factor in human life. The home may be the centre around which much is gathered. Here happiness may be augmented almost indefinitely, and luxury and refinement may enter, to a certain extent, without debilitating and weakening the individual. Here

character which is most important may be developed, the affections may bloom in all their beauty, and the sympathies find an atmosphere in which they may unfold.

Another object of marriage is companionship with those who may have the same sympathies, hopes, aspirations. It is not a pleasant thing to go through the world without sympathy, and to meet only those who have no interest in us except to make us contributors to their welfare and their selfish ends. In the physiological and sanitary marriage there can be no selfishness. Each member works for the other's good; each contributes to the other's welfare. In the outside world it is different; each seeks to use the other for selfish purposes, and this makes life a contest, a struggle, a battle. If such a state of things were to prevail in the home, then marriage would be an evil, and not a good. All marriages where there is such a state are unsanitary.

Then, too, one object of marriage is the gratification of love. This is the highest sentiment of the human heart. Intellect pales before it. The sacred book could have said nothing more exalted when it avowed that "God is love." All human hearts have somewhere and sometime a desire to love and be loved. A loveless life is a starved life. Love warms human nature; it sets it on fire. It can receive its highest development only in marriage. The loves between friends are very beautiful; but the love between a man and woman in a perfect marriage is divine.

Finally, the state and civilization have their root in marriage; without it they could hardly exist in any high degree. If we would have the state prosper most of its sound and healthy members must be married. Individuals may remain single to their own advantage and the advantage of the state; but this does not contradict the general rule. It may be better for the world that now and then a great philosopher shall remain single, and take the time he would have devoted to the care of the family to investigate the laws governing society and the individual; but he will find some of his chief delights and recreations in the society of the children of his married friends and acquaintances. It is true that the state is not benefited by the marriage of its feeble and diseased members. These cannot make happy homes, and they become a burden to others. Such may properly be discouraged from marrying—perhaps prohibited from it by public opinion at least, if not by law. Other objects of marriage might be given, but those already named are quite sufficient. If it is so important and has so much dependent on it, it follows that the more perfect it is the more perfectly will it serve its ends. The sanitary marriage is something more than a union on purely physiological principles for the rearing of the most perfect children. It is a marriage in which there is a union of mind, a union of heart—a union of all that is sweet and beautiful in human nature.

CHAPTER III.

THE BASIS OF MARRIAGE.

THE basis of all true marriage is love. This has been the belief and the practice of the ages. Love is old. It had its beginning with the beginning of life; nay, more, it goes back to the very heart of all things. The very atoms that make up the material universe have their loves, and form their alliances on certain affinities which exist between them. Even plants will mate only with plants of their own kind; and in the animal world love is an important element, from the butterfly which exists but for a day to the noblest of all mammals—the elephant, the horse, the dog, and the ox, and man. Love is older than sanitary science, and can never be replaced by it, however much it may aid and perfect it. There ought to be more of it in the world—of the good old fashioned kind which permeates every fibre of the being and glows with a brightness not tarnished by the slight trials of life. It must not, however, be mistaken for sentiment, for admiration, for an idle fancy. It is more than all these. It goes to the very core of the being; while the others are superficial, transparent, fleeting. But, in order that there may be love, there must

be adaptation. The parties must be going the same way in life. They must have similar tastes, aspirations, hopes and desires. One must not be a devotee and the other an infidel. One must not love tobacco and the other hate it. One must not be an advocate of temperance and the other of drinking. One must not be highly educated and the other an ignoramus, with no love for knowledge and wisdom. Extremes of belief do not go well together. It is not necessary that the wedded pair should be alike in all things. One may love art and the other care nothing for it. One may be a musician, the other a microscopist, and yet perfect harmony exist, if each respects the tastes of the other as much as his or her own. Indeed it is far better that differences like these should exist, otherwise there might be too much monotony in their lives, too much sameness and devotion to one special line of thought and work. These differences give a zest to love and make it broader and grander. The dissimilarities should be such as will increase love rather than diminish it. If the one is an ardent Catholic and the other an ardent Protestant, then each may hate the other's faith, and soon learn to hate one another, too. But if one is a fine botanist and the other a fine physiologist there will be no mutual hate, but each may and probably will respect the other.

In the present state of human development nearly all marriages are fragmentary. A perfect marriage can only take place between equals, or at least between equiv-

alents. Now it frequently happens that the parties are very unequal; they are married but partially, and there are but few points of agreement between them.

For a better understanding of the complex nature of that love which unites the sexes, read Herbert Spencer, who says :—

"Love is habitually spoken of as though it were a simple feeling; whereas it is the most compound, and therefore the most powerful of all the feelings. Added to the purely physical elements of it, are first to be noticed those highly complex impressions produced by personal beauty ; around which are aggregated a variety of pleasurable ideas, not themselves amatory, but which have an organized relation to the amatory feeling. With this there is united the complex sentiment which we term affection—a sentiment which, as it can exist between those of the same sex, must be regarded as an independent sentiment, but one which is here greatly exalted. Then there is the sentiment of admiration, respect, of reverence; in itself one of considerable power, and which in this relation becomes in a high degree active. There comes next the feeling called love of approbation. To be preferred above all the world, and that by one admired beyond all others, is to have the love of approbation gratified in a degree passing every previous experience; especially as there is added that indirect gratification of it which results from the preference being witnessed by others. Further, the allied emotion of self-esteem comes

into play. To have succeeded in gaining such attachment from and sway over another is a proof of power which cannot fail to agreeably excite the *amour propre.* Yet, again, the proprietary feeling has its share in the general activity. There is the pleasure of possession—the two belonging to each other. Once more, the relation allows of an extended liberty of action. Towards each other a restrained behavior is requisite. Around each there is a suitable boundary that may not be crossed—an individuality on which none may trespass. But in this case the barriers are thrown down, and the love of unrestrained activity is gratified. Finally, there is an exaltation of the sympathies. Egotistic pleasures of all kinds are doubled by another's sympathetic participation, and the pleasures of another are added to the egotistic pleasures. Thus, around the physical feeling forming the nucleus of the whole, are gathered the feelings produced by personal beauty that constitute simple attachments, those of reverence, of love of approbation, of self-esteem, of property, of love of freedom, of sympathy. These, all greatly exalted and severally tending to reflect their excitements on one another, unite to form the mental state we call love. And as each of them is itself comprehensive of multitudinous states of consciousness, we may say that this passion fuses into immense aggregate most of the elementary excitations of which we are capable; and that hence results its irresistible power."

CHAPTER IV.

TEMPERAMENTAL ADAPTATION.

THE doctrine of the temperaments goes back to very ancient times, and yet we do not find that the literature of the subject is very voluminous. The fact is the subject has never received any very extensive attention through scientific research. Indeed it is doubtful if it would bear scientific analysis. Modern physiology hardly recognizes the subject at all. Carpenter, in his work on "Mental Physiology," does not refer to it. Neither do our modern authors on human physiology have much to say about it. Those who have written on the subject do not agree as to how many temperaments there are. Some enumerate three, some five or six, and no doubt there might be more divisions still. But though science at present ignores the doctrine of temperaments, and perhaps will always continue to do so, yet they cannot well be spared from the practical every-day knowledge of life and of men. By their aid we classify human beings so as readily to distinguish some of their most important physical peculiarities. The word "temper-

ament" means a state of the body with respect to the predominance of any single quality. If in a person the brain and nervous system predominate, we speak of his having the nervous temperament. If the bony and muscular structures predominate, we speak of his having the motive temperament. If the vital organs predominate, we say that he has a vital temperament. These three temperaments are all that need be recognized for practical purposes. They are always combined in every individual, but in varying proportions. Sometimes they are harmoniously blended, and then we speak of the harmonious balance of temperaments. Sometimes one temperament is excessively developed and the others deficiently. Sometimes two predominate and one is deficient. Sometimes neither are well developed, and then we have stupidity and feebleness. According as one or the other temperament is developed so is the character. If the brain is in excess it will influence the life and mould the nature. The person will then be fond of brain work, and less fond of muscular labor. If the muscles are in excess, he will be fond of motion, of something that requires physical exertion. If all of the temperaments are developed he will like variety to call all his powers into exercise.

The value of a knowledge of the temperaments in deciding the question of marriage is very great. Not only the happiness of the parties is involved, but also the symmetry, mental balance and well-being of offspring.

The consequence of a discordant union may plunge future generations into misery, or cause a whole family to become extinct.

Dr. Jacques, in his excellent little work on the temperaments, has given some very valuable suggestions on marriage. He says :—

" Some physiologists have taught that the constitution of the parties in marriage should be similar, so as to insure similar tastes, habits, and modes of thought ; while others have contended that contrasts should be sought to give room for variety and prevent the stagnation of a level sameness. Neither of these statements expresses fully the true law of selection, though both are partly true. There can be no harmony without a difference, but there may be a difference without harmony. It is not that she is like him that a man loves a woman, but because she is unlike. For the same reason she loves him. The qualities which the one lacks are those which in the other attract and hold the fancy and the heart. The more womanly the woman, the greater her power over men, and in proportion as she approaches the masculine in person or in character will she repel the other sex ; while a woman admires, no less, in man true manliness, and feels for effeminacy and weakness in him either pity or contempt. What should be sought, and what is sought, as a rule, in a husband or wife, where arbitrary conventional customs and considerations of rank, wealth, and positions are not allowed to interfere, is not

a counterpart, but a complement—something to supply a lack,—the other self, which shall round out one's being and form a perfect, symmetrical whole. As in music it is not contiguous notes which combine to form chords, but those separated from each other, as a first, and a third, and a fifth; so we produce social and domestic harmony by associating graduated differences. Two persons may be 'too much alike to agree.' They crowd each other, for 'two objects cannot occupy the same space at the same time.' So while a 'union of opposites' is by no means to be insisted upon, or even recommended, as a rule, yet a too close similarity in constitution should be avoided, as detrimental to offspring, as well as inimical to the happiness of the parties themselves. The mental temperament, for instance, strongly developed in both would tend to intensify the intellectual activity, already perhaps too great, in each, and if offspring should unfortunately result, they would be likely to inherit in still greater excess the constitutional tendencies of the parents."

"In the same way, a marked preponderance of the motive or the vital systems in both parents leads to a similar state of connubial discord, and a lack of temperamental balance in the children, if any resulted from the union. Where there is a close approximation to a symmetrical and harmonious development—a balance of temperaments—the union of similar organizations is less objectionable, and may result favorably, as respects both parents and

children; but such cases are so rare that a rule drawn from them would prove of little practical value.

"The occasional disastrous effects upon offspring of the marriage of blood relations, it seems probable, are mainly, if not wholly, referable to the similarity of constitution inherited by each from the common stock; for we find that such unions are by no means uniformly unfavorable to progeny—some instances being quoted by eminent writers on the subject, where intermarriage has resulted in the improvement instead of the deterioration of the families thus uniting their members. It is likely that a close investigation into the circumstances in such cases would show either an approximate balance of temperamental elements of the parties, furnishing no excesses or deficiencies to be exaggerated in progeny, or else an exceptional diversity in the constitutions of the male and female members of these families.

"The vital system is the life-giving and life-sustaining element in the human constitution, and must be considered as the physical basis of marriage and parentage. This temperamental element should, therefore, undoubtedly be strongly indicated in one, at least, of the parties to a union; and if strikingly deficient in one, should be predominant in the other, to insure a proper balance of offspring. A man with an excess of the mental temperament and deficient in vital stamina should either remain single or marry a woman with an immense fund of vitality, but sufficiently intellectual to appreciate him, share,

in a degree, his aspirations, and sympathize with him in his tastes. If he were to marry a woman of the mental temperament and of low vitality, the children, if any, would probably be few and puny, and die young; the too keen sensibilities, the excess of mental activity, and the intensity of all the pains they suffer, or the pleasures they enjoy, would soon wear out the inadequate physical system with which alone their parents were able to endow them.

"Where the motive temperament is strongly indicated, there is needed in the one selected as 'partner for life,' a predominance of the vital or nutritive system, to impart vivacity and cheerfulness to the family circle, and to transmit to offspring the proper degree of mental and physical activity, warmth, amiability, and suavity of character, as well as to give a desirable softness and plumpness to the physical system; while a good development of the mental is requisite to refine, and give intellectual power and æsthetic tastes.

"A man with a strongly developed motive temperament united in marriage to a woman of the same organization would lack the stimulating, warming, and softening influences which so favorably modify the somewhat slow, cold, rough, hard and austere features characteristic of the constitution, and the pair would move too slowly for the current of progress around them, unless awakened by the strong influence of some grand revolutionary movement; and their children would inherit, in a still

higher degree, their homely angularities and their energetic, persistent, and sturdy, but hard, rough, and severe traits, of character. Fortunately the motive temperament is not a common one among women, nor do men of this organization affect their style of beauty, even in its modified feminine form, but look rather for the plump rosiness of the fair-haired blond, or the pale, delicate loveliness of the gray-eyed Psyche, whose frailness appeals to their strength, and whose mental quickness contrasts so strongly with their slow, but powerful intellectual movements.

"A rational, natural, and harmonious marriage connection requires to have its foundation laid in a broad, full vitality; but this element must not compromise also the superstructure. Where both parties are of the vital temperament the union is not favorable, either to them or to their children; there being no cooling, restraining, or refining influence at work with them, the parents are apt to give way too much to their impulses and passions, to live too fast, to fall into excesses and dissipations, be fitful, vacillating and indolent, and to transmit to their children too much of the animal nature, too little mental power, and an excess of appetite, passion, and love of pleasure. An influential development of the mental and the motive elements in a husband or wife should be sought by a person of a full vital temperament, the one to give toughness, and the other to refine and elevate

the character, and impart intellectuality, taste and love of culture to offspring.

"From the foregoing considerations it appears that the point to be aimed at, is a proper balance in all the temperamental elements, what is lacking in the husband to be made up in the wife, and *vice versa*—the one being a complement or counterpoise of the other, so that an even development, as nearly as possible, may be transmitted to offspring.

"Beyond the somewhat general statements thus made, the correctness of which can hardly be called in question, it is not, perhaps, in the present state of our knowledge of the laws of social harmony, safe to go. We have correctly given, as we believe, the general law of harmony in our social relations. If we cannot lay down exact formulae for its practical application, which will apply to all cases, it is simply because the gamut of the human passions, unlike that of the musical notes, has not been definitely determined, or the elements of our physical organization reduced to a graduated series. The time will come, in the progress of the race in knowledge, when men will touch with no uncertain fingers the keys which are to render the sublime anthem of disenthralled and harmonized humanity. In the mean time, reader, first 'know thyself,' mentally and temperamentally, and then, through the 'signs of character'—as stamped upon every organization—upon the cranium, upon the face, upon every organ, feature and movement, study and become

acquainted with those around you, and you will find little difficulty in determining, in reference to any particular individual of the opposite sex, whether there is between you and him, or her, that graduated difference that might bring harmony out of union."

CHAPTER V.

HEALTH IN SANITARY MARRIAGE.

HEALTH is a most important factor in a sanitary marriage. Let this subject be considered carefully. What is health? It is a condition, a state of being. The words hale, healthy and holy, have nearly the same meaning and origin. They are all derived from roots which have a signification similar to the words, safe, sound, whole. A condition of health, then, is a condition of holiness, soundness and physiological integrity, and not one of physiological bankruptcy. There are two processes going on in the body continually, which influence and decide the healthy and normal conditions of every person. One is the process of waste, the other that of renewal. Where the waste of the protoplasmic substance, or living matter in the body, is in excess of renewal, the tendency, if long continued, causes a diseased state and makes a poor constitution. When the renewal of the living matter is abundant, the constitution is good and the health is excellent. In childhood, growth is in excess of decay. In manhood's prime, there is an equilibrium of these processes. In declining years the living matter of the body becomes scanty, and is used up

faster than it can be renewed, and then the physical integrity, the holiness and soundness of the body, is not maintained. Health is the highest normal condition of all living things, man not excepted. It is that condition which gives ease and comfort and happiness ; nay, more, it gives power to accomplish the tasks of life, to fight its battles, to bear its burdens without fainting or growing weary. For great performances, extraordinary health is needed.

Emerson says : " If Eric is in robust health, and has slept well, and is at the top of his condition, and thirty years old, at his departure from Greenland he will steer west and his ship will reach Newfoundland. But take out Eric, and put in a stronger and bolder man,—Biorn or Thorfin,—and the ships will, with just as much ease, sail six hundred, one thousand, fifteen hundred miles further, and reach Labrador and New England. There is no chance in results. With adults, as with children, one class enter cordially into the game, and whirl with the whirling world ; the others have cold hands, and remain bystanders, or are only dragged in by the humor and vivacity of those who can carry a dead weight. The first wealth is health. Sickness is poor-spirited, and cannot serve any one ; it must husband its resources to live. But health, or fulness, answers its own ends, and has to spare, runs over, and inundates the neighborhoods and creeks of other men's necessities." In another place this same gifted author says, " Give me health and a day,

and I will make the pomp of emperors ridiculous." Many other far-seeing authors, both ancient and modern, have urged with great emphasis and power the value of health and strength. Shakespeare says, "Oh, it is excellent to have a giant's strength." Cicero declared that "by no means can a man come nearer to the gods than by conferring health on men." Sterne says in one of his brilliant essays, "O, blessed health, thou art above all gold and treasure; 'tis thou who enlargest the soul, and openest all its powers to receive instruction and relish virtue. He that has thee hath little more to wish for, and he that is so wretched as to want thee, wants everything with thee." Mr. Beecher, in a powerful sermon preached to medical students many years ago, declares, that "one of the burdens that bends, almost breaks, the back of society, is the ill health that does not need to exist." Plato exhorts men "not to employ the mind without the body, neither the body without the mind, but to keep them like a pair of horses, and when at any time the body toils and labors with the mind, to be the more careful of it by keeping it in its beloved health." Albitis, a Hindoo writer of ancient times, asks: "Who is this natural beauty which advances with so much grace? The rose is on her cheeks, her breath is as sweet as the morning dew, a joy tempered with modesty animates her countenance. 'Tis health, the daughter of exercise and temperance." In Ecclesiasticus we find the same sentiment expressed in vigorous language.

"Better," says the writer of this book, "is the poor, being sound and strong of constitution, than the rich man grievously afflicted in his body. Health and good estate of body are above all gold, and a strong body above infinite wealth. There is no richness above a sound body, and death is better than a life of continual sickness." "Health," says Ruskin, "is the possession of the valuable by the valiant." "Health," adds Prof. Riley, "is of such extreme value that he who is not healthy cannot possibly be wealthy. In his pockets, or in the vaults of some bank, he may have title-deeds, mortgage-deeds, and bonds; but if he cannot work, walk, play, or enjoy his food, he is a poor man, and the estates he claims to own on this globe are of no more real good to him than if they were situated on the moon.

"Civilized people, who are possessed of a 'mania for owning things,' underrate the value of their own bodies. It is said that an Irishman who had only one dollar expended the dollar for a purse 'to keep it in.' There are many Americans who barter their lives for fine houses to dwell in, or swap healthy livers for gold dollars.

"Good health cannot be bought in boxes, bottles, or buckets, or at so much a pound or foot. It can be obtained only by a healthy mode of living.

"Without the capacity to enjoy life, no man can be wealthy. No kind of good appetite can be bought with money; and the man who has not a good appetite—for healthy work or wholesome food—is a poor man."

A dead man owns nothing; a sick man owns little; a healthy man—healthy in the widest sense of the term—owns all that is possible for mortal man to own.

The farmer in improving his fruits and grains understands the value of a high degree of health or soundness in the seed which he plants. Would he grow an extra fine crop of any kind, with what care he selects the best kernels to bury in the soil, and in this way not only do our fruits and grain maintain their excellence, but actually improve from year to year. A good example of a plant grown for a long time without this thoughtfulness in the selection of the seed is the potato, and as long as this want of care continued the results were serious. Not only did the rot endanger the crop, but often destroyed it altogether. In more recent years this disease has been almost entirely eradicated by the improvement of varieties, and greater care in the selection of tubers from which to propagate. Corn, on the other hand, is a grain of which the seed, even by the most shiftless farmer, is chosen with great carefulness. Not only are the early ripening and sound ears invariably selected, but the imperfectly developed seeds at each end of the cob are always rejected. Who can doubt that a few years of the contrary practice would injure this cereal to the extent of millions of dollars annually?

In the breeding of domestic animals we have also ample evidence of the value of a high degree of health in the progenitors, and also of the injurious influence of

disease on the offspring. A tendency to consumption and dysentery in cattle is often indicated by well marked signs, the most obvious of which are a long thin carcass, narrow loins and chest, flat ribs, a thin neck and withers, hollowness behind the ear, fulness of the under jaw, a small muzzle, a hard skin, thin dry hair, inaptness for taking on fat, prominent bones, and a general coarse ungainly appearance. These signs are all indicative of defective nutrition and an impaired or scrofulous constitution. They are also transmissible in a high degree ; and the stock-breeder, who wishes to improve his stock, invariably rejects them as breeders. They are unfit to give birth to a fine race of cattle. The same conditions prevailing in horses, sheep, and swine, render them unfit for the same purpose. Bone spavin, curbs, ringbone, navicular diseases, and affections of the joints are transmissible. Dr. Manly Miles gives a case in point :—"A mare affected with ringbone that unfitted her for farm work was kept as a breeder for several years. Her colts were uniform in form and color, and as they showed no indications of disease when two or three years old, they found ready buyers at good prices. At the age of five or six, however, they all had ringbone to a greater or less extent, and several were entirely disabled."

The same author adds : "In horses, strain of the back-tendons, swelled legs, grease, and roaring are often hereditary ; while a predisposition to rheumatism, malignant and non-malignant tumors, chronic cough,

ophthalmia and blindness, epilepsy, and a great variety of nervous disorders are inherited by them in common with cattle, sheep and swine." According to Mr. Trehonnais, a stallion in France became blind from the effects of disease, and all of his progeny had the same defect before reaching the age of three years. Dr. Dren says, that "a very large number of the colts of the celebrated Irish horse Cregan have become affected with ophthalmia in the worst form. I have learned that the tendency is still decidedly marked, even in the fourth and fifth generations appearing, and sometimes causing blindness in very early life." The same writer gives another case, equally instructive, of a stallion that at the age of four years appeared perfectly sound. His limbs were nearly black and well formed. Soon after they became thick and greasy, and, although the mares mated to him were free from such faults, the progeny have shown, as can be traced in every case, unmistakable evidence of their inheriting the disease of their sire. They all have been found liable to swelled legs when allowed to stand for a few hours, and most of them have been subject to repeated attacks of weed; all are affected in the spring with scurviness of the skin of the hind legs, excessive itchiness, and lose at an early age their flatness and smoothness of limb. These faults are to be traced into the third generation.

These instances are given to show what slight defects in animals are inherited, and the harm that comes

to the offspring, and also to show the importance of health even in the rearing of our domestic animals. The scientific breeder now rejects animals in any way defective or unfit to propagate their kind. When Lord Rivers was asked how he succeeded in breeding such fine greyhounds, he replied, "I breed many and hang many." Dr. Miles once asked a famous breeder of sheep how many of the males bred by himself he would be willing to breed from, and he replied promptly, "Not one in three hundred." Mr. Dickson says, "Our improved breeds are what they are as the result of extraordinary judgment and skill in making selection of healthy, well-formed animals for sires and dams."

Dr. T. L. Nichols says on this subject and the application of its principles to the improvement of the human race:

"Men, like animals, or, if Darwinians prefer, like other animals, can be improved in health, intelligence and morality by judicious breeding. Dogs, sheep, cattle, and birds, are bred with great care. There is a nice selection of fathers and mothers, so as to produce the most desirable offspring. Breeders of horses pay thousands of pounds for noble sires; and some brood mares bring great prices. Cattle breeders study pedigrees, and Americans have paid large prices for English bulls and cows.

"In the human race there is a process of natural selection favorable to the improvement of the race, but it

is interfered with by other influences—money, caste, and other social considerations. Choice is in this way restricted. A rich husband is preferred to a handsome or healthy or clever one. A large dowry may induce a man to put up with a scrofulous wife. A consumptive young lady may have a good connection. An exhausted, broken-down *roué* may have a title, or an estate. We know what people mean by 'a good match.' It never means health, or beauty, or intellect. It may not mean good morals or disposition.

"And yet the form of a nose may descend through twenty generations—and if so, then the form of the brain, and all the qualities of man or woman. It is said that the sins of parents are visited upon their children to the third or fourth generation. We know that form and color last much longer. The Jews have the physiognomy to-day, all over the world, that is pictured upon the monuments of Egypt and Nineveh. They have lasted three thousand years, and may last as much longer—will last as long as Jews continue to marry Jewesses. And the Jews are not a bad race. Few are so healthy, so long lived, so rich in genius.

"Seriously, people who think of getting married ought to think a little more about it. There are persons who ought not to marry. There are persons who would be criminal if they handed down to posterity the physical, mental, or moral results of a bad organization, or of their vicious demoralization. Our most careful scientists

tell us that drunkenness is hereditary—that many crimes are hereditary—that madness, murder, and suicide are hereditary. Our criminal population is composed of the children of criminals. The prisons are filled with a criminal race as the workhouses are filled with a race of paupers. Change of conditions, no doubt, may redeem such a race, but it would be safer to discourage its perpetuation.

"Men and women marry for themselves when they should marry for their posterity. The greatest gratitude a man can owe to his grandfather is for giving him a good, wise, healthy grandmother, and *vice versa.* Shakespeare makes one of his characters thank his mother fervently for giving him such a father. How many a man and woman has earned the curses of their children for giving them bad mothers or fathers!"

The sanitary marriage, as already stated, can be consummated only between healthy persons. As perfect health, however, is rarely found, it would be Utopian to insist that none should marry who do not possess it in the highest degree. If this were done, the desired result could not be attained. The standard, however, must be held as high as is consistent with reason, trusting that future generations will raise it higher still, so that, eventually, the day will come when public sentiment will not permit any to marry who are not in good health. It may be insisted now that invalids shall not marry. If they do, and must make their own way in the

world, they will not have the strength to do it. Their lives will consequently be lives of privation and suffering. If they rear children, these will be likely to inherit their diseases and become burdens on the public.

Two persons with even a slight tendency to the same diseases, either inherited or acquired, should not intermarry, even if both are in good health at the time. If they do, they may entail a curse on their offspring, who will be quite sure to inherit their diseased tendencies. If two persons with a disposition to consumption, scrofula, or dyspepsia, intermarry knowingly, they commit a sin against their progeny which cannot be blotted out. If two persons, both descended from parents with insanity in their blood, marry, they do a wrong which is unpardonable.

There are some families which may best be designated "played-out families." Excesses have told on their constitutions so that they are blighted. The doom of extinction is written on every feature of their faces and every fibre of their bodies. Their blood is tainted with the vices of generations of ancestors. Examined under the microscope it shows a great deficiency in protoplasmic, or living matter. When such families intermarry, they commit a crime against the laws of physiological and sanitary marriage which heaven can only condemn. Even love does not sanction such a union. It is true, under favorable circumstances, such persons might, if past the age of rearing children, marry

for friendship, a home, or similar considerations, but such unions have nothing to do with sanitary marriages. They do not pre-suppose offspring, which the latter does.

If there be any serious disease of the generative organs in either party their marriage would be unphysiological. To bear healthy children, these organs should be in a condition to perform their functions naturally and healthfully. To decide this question, it may sometimes be necessary to call in the services of a physician, but he should be one imbued with the gravity of the subject, and not one who is willing to wink at physiological sin, and give any advice which may be demanded.

It is not safe to be guided by every physician's counsel, for they have not generally given sufficient thought to this subject to be wise counsellors, and often advise marriage when, from a sanitary standpoint, it should be forbidden.

Syphilis is a disease which, existing in either party, is a bar to physiological marriage. If a woman marries a syphilitic man, even though the disease may exist in only a slight degree, there is danger that all the children will be still-born, or capable of only a feeble existence. A single case may be mentioned bearing on this point. A man with only apparently a slight degree of this disease married a healthy woman. They have given birth to seven children, all dead. The life-long happiness of a family has been blighted. It may not always be so serious as this, but the danger is so great that no person

in his or her senses will ever marry a syphilitic with the hope of rearing healthy children.

The consumptive, the scrofulous and those of feeble constitution cannot contract a sanitary marriage, which, as before stated, can only occur between healthy persons, and those adapted to each other by habit, education and temperament; but, as health is the exception, so it is permissible for those to marry who are not specimens of the highest condition of health, and their union may be considered a comparatively physiological one. But in such cases great care should be exercised, and if one of the parties is deficient physically, the other should not be deficient in the same direction. If one has lungs not as well developed as the highest physical condition requires, the other should have strong, well developed ones; but in this case, it is better that the deficiency should be on the part of the father, as weakness of these organs is most likely to be transmitted from the mother to offspring. If there is also a deficiency of development in the digestive apparatus of one party, there should be no deficiency in the other; for as weakness of the digestive organs is most likely to be transmitted by the mother, it is better that the deficiency should be on the side of the father. This branch of the subject, however, will receive a more complete treatment in a future chapter.

Many think love between two persons justifies their marrying. This is not so. Beautiful as this passion is, heavenly as is its source, it does not justify doing a

wrong to offspring which may curse generations yet unborn. We use the word "curse" advisedly, for disease is the greatest of curses, and indirectly leads to crime. A majority of all criminals are either diseased or have an imperfect physical development. Those who have spent much time in criminal courts must have observed that a majority of persons convicted of crimes are inferior in their physique. They cannot earn an honest living by honest work, and so they try to do it by "light-fingered" employments. Besides, there is acquired quite enough disease on life's journey, without adding to it by transmitting the infirmities of one generation to another.

The following is a list of diseases known to be inherited: insanity, gout, syphilis, consumption, scrofula, dyspepsia, emphysema of the lungs, cancer, rheumatism, and other maladies of a similar nature.

Persons whose constitutions have been somewhat injured, but who are not tainted with actual disease, may rear children much healthier than themselves, provided their own lives are regulated by a wise hygiene. This has been demonstrated over and over again. Good habits of eating, sleeping, working, a wise control of the appetite and passions, and gymnastic culture, help them to overcome in their children their own deficiencies. If they are growing better all the while, instead of worse, and are not too much broken in constitution, it may be safe and wise for them to marry.

Healthy persons physiologically married often rear sickly children. In many cases the reason is that their own habits are not physiological. They go to excess in labor, in food and drink, in passional indulgence. They waste life's forces instead of husbanding them. They are on the retrograde, instead of maintaining their physical integrity. They throw away their advantages, and are surpassed by the physically inferior, but more wise and prudent.

Life is growing more complex with each generation. New faculties are being developed in humanity, and partially developed ones are taking on a high degree of activity. The forces playing upon humanity are multiplying as civilization advances, consequently if we do not add to our knowledge of life and health, and their laws, our own progress will be slow, and perhaps cease altogether. It is to prevent this that so much stress is laid on this subject.

CHAPTER VI.

PHYSICAL CULTURE AND SANITARY MARRIAGE.

CLOSELY allied to this subject of health as a factor of a sanitary marriage is physical culture, without which the highest condition of health is not attainable. There is such a thing as excess of physical training. Athletes and professional gymnasts are apt to have too much of it; so are those whose lives are devoted to the hardest kind of muscular labor. Physical culture should never be in excess nor in deficiency. Although it may seem to be a departure from the main subject, it may not be unprofitable to give a brief account of physical culture among the ancient Greeks, and its relation to the health of their offspring. Youthful sports have been the spontaneous outbursting of the young of all ages and nations, but they had never been reduced to a system until it was done by the Greeks. Their course of education included two very important subjects, viz., music and gymnastics. Music had a direct and special relation to mental culture, and embraced the liberal arts and sciences, including architecture, sculpture, language, poetry, eloquence, philosophy

and history. Gymnastics had relation only to physical education. The gymnasiums of the ancient Greeks were their schools, and not a town in Greece but had one or more. Their situation was in the suburbs of the most beautiful and healthful part of the city, occupied nearly ten acres of ground, and embraced besides its buildings, groves for philosophic study, and enclosures for out-door exercise in pleasant weather. The buildings contained rooms for lectures on philosophy, for private instruction, for washing and dressing, for anointing with oil, for boxing, running, wrestling, ball-playing, bathing, and for the spectators. A presiding officer, called a gymnasiarch, had oversight of the Institution, the pupils, lecturers and teachers, enforced the laws of the place, and dismissed those instructors who were found to be unfit for the place. Many of these were employed; some to conduct the exercises, and others to adapt them to the requirements of the youth. From an early age until 16 the boys were taught music and grammar, and gave attention to the lighter gymnastic games. From 16 to 18 they spent most of their time in the practice of their exercises. At 18 they were fitted for war, for leisure, for the study of philosophy; or, perhaps, they devoted their lives from this time on to athletic sports, and became prize runners, wrestlers, or fighters.

The kinds of exercises were, for boys, the ball and top, and the *scaperda;* an exercise which consisted of

two boys drawing each other up and down by taking hold of a rope passing over a pully. The *pentathlon* was practised by the young men, and consisted of five different exercises, viz., running, leaping, throwing the *discus*, hurling the spear, and wrestling. The *discus* was somewhat like our game of quoits, and it was won by the person who threw it the farthest. The rougher games were prized most by those who expected to follow a military life, or to become athletes. The lighter games, that cultivate ease and grace, were prized by those who desired to be gentlemen, scholars, or philosophers. The sick, of which there were few, were prescribed for according to their requirements.

The training varied somewhat in different parts of the country. The Spartans considered the subject of education to be mainly the training of men for war. They valued those citizens most who were brave, hardy, and able to fight. To secure such they did not, however, depend exclusively upon physical education. Lycurgus made laws regulating marriages, so as to prevent the sick from marrying or becoming parents. He ordered the young women to be trained in running, wrestling, throwing of quoits and darts, in order that they might become strong and give birth to offspring like themselves. In a cruel manner he ordered all children to be examined soon after birth, and only the strong ones reared. The nurses never bandaged them, but their bodies were left free that they might have a better physical

development. Parents were not allowed to educate their children as they pleased, but at seven years of age they were enrolled in companies and trained so as to secure vigor, firmness, and courage. Lycurgus considered children the property of the State; he would neither have them begotten nor trained by ordinary persons. Their gymnastic education continued until the 18th year.

In Athens, where philosophy and poetry were so successfully cultivated, the training was not so severe; and while it was calculated to secure a graceful and manly bearing, it did not debase, but quickened the intellectual faculties. The Athenians understood quite perfectly the relation between the body and mind, and the fact that the latter could not be in full health and elasticity, unless the former was sound; and no means were thought by philosophers and physicians more valuable to preserve and restore health than exercise. Gymnastics were considered of so much importance that they consumed more time in the educational course than all other branches of education. Nor did its practice cease on the youth arriving at maturity; it was continued, although in a less degree, to the end of life.

In Sparta, as previously mentioned, the girls received training in the gymnasium; but in Athens this was not the case. It was infamy for a woman to appear at their games, and public opinion forbade her appearance in the gymnasium. The rearing of children and household

duties occupied her time. History informs us that Spartan women, and no doubt on account of their physical training and greater freedom, were far superior to those in other parts of Greece.

The reader must be informed, however, that the Grecian athlete did not belong to the regular schools of philosophy, although their first education was in them. They were the professional prize-runners, wrestlers and fighters who contended at the Olympian games, and devoted their whole time to training. They had institutions for their special use, and mental culture constituted no part of their education. Plato speaks of these athletes as "a sluggish set of men, in dubious health, and short lived. A more elegant kind of exercise is required for our military wrestlers, who ought to be wakeful, to see and hear acutely, to be able to endure changes of food, heat and cold, and not to fail in health." Of the food of the athlete we have full accounts, but of that of the pupils in the gymnasium we know but little. One historian says that, originally, the former lived on fresh cheese, dried figs, and wheat; but after a time they ate pork, beef, bread, and cheese. All seasonings, delicacies and confections were abstained from, as producing an injurious effect upon the body. Bathing was considered so important that every gymnasium had magnificent apartments where cold, hot and sweating baths were administered daily after the exercises were over. By this means a vigorous and healthy condition of the skin was

maintained, and congestions of various organs which often follow vigorous training, and are so productive of discomfort and disease, avoided.

The result of this blending of gymnastic and mental training, for which the Greeks were so famous, was productive of the greatest good. They excelled all other nations in a healthy and beautiful development of body, and possessed minds of power and elasticity which have made their productions the admiration of ages. Gymnastics among this people were not the growth of one day, or of one mind. Their birth was with the birth of the nation. At first they were rude and warlike; their exercises took place in the open air, usually by the river side, where bathing and swimming could be practised. They grew into a distinct order as early as the time of Solon, who made the first laws for their more complete development. At a later period, when wealth became more abundant, and gymnasiums became popular places for idle loungers, their original use was forgotten and they degenerated into places of amusement; and at last, when Greece lost her own identity and became a part of Roman civilization, gymnasiums, which previously had been the schools of philosophy and manly culture, became places for training gladiators, whose exhibitions so much amused the brutal tastes of the Roman people.

In our day, unfortunately, physical culture has not the high place in the curriculum of education that it had in ancient Greece. The result is that the bodies of our

people present every phase of physical imperfection, and this is transmitted to the children. The physiological marriage requires that the muscular system be evenly and harmoniously developed, though not in excess; and also that all of the organs of the body—the lungs, heart, stomach, liver, and intestinal canal—be full of vigor. This can only be secured by thorough physical culture. It need not be in the gymnasium; it may be by labor, by sports, by all those means which develop the body. If an organ is allowed to become weakened through want of exercise, the offspring inherits this organ weakened and with a tendency to disease. Our school system, on account of its defective system of physical culture, throws upon the world each generation an army of people who can never be physiologically married. So, too, the multitude of young men and women who work in ill ventilated factories, and thus dwarf their bodies, are poor subjects for physiological marriage, which requires a high state of physical culture.

The sooner this subject can be impressed upon our educators the better. Philosophers and statesmen, social reformers and philanthropists, can find no more important theme for their tongues and pens. Instead of busying themselves with selfish schemes, or a sordid greed for wealth, which too often injures instead of benefits their children, let them engage in this highest of all labors, the preparation of public opinion for the reception of these grand truths.

CHAPTER VII.

SANITARY MARRIAGE AMONG THE SPARTANS.

In the preceding chapter an account of the physical education of the Greeks was given, and its importance as a factor in physiological marriage and parentage set forth. In this it is purposed to continue the subject of Spartan training, and its influence upon offspring. These people had a different standard of morals from ours. They knew and cared little for the doctrine of right and wrong as we understand it. Beauty and usefulness were the standards by which they judged everything. We can have no idea of the passionate fondness of the Spartans for the beautiful; it penetrated every rank of society, it dominated every individual's thoughts; but they saw the highest ideals of beauty only in the perfect human form. A beautiful face did not suffice; it must, too, be a beautiful body, perfection of every limb, a harmonious development of every part, grace in motion and action. It is not too much to say that the Spartans worshipped beauty; they saw divinity in it, as we do in the highest forms of conscience, heroism and honor. To show the truthfulness of this statement it

will only be necessary to quote one among the many instances in which this was the case. The orator Hyperides was once defending a beautiful woman before a court of justice, but his eloquence fell with little effect upon the ears of the judges. He instinctively felt that his case was lost unless he could strike some new chord, touch some tender spot in their minds; and to do this he appealed to their love of beauty by removing the flowing robes of his client and revealing a form of marvellous perfection. The effect upon the judges was electrical, and they acquitted the woman at once. Such an argument in our age would be considered disgraceful in the extreme; but these judges had not the slightest thought of pruriency; they saw in this matchless form not mortal made of flesh and blood, but a prophetess of the divine, and it would have been sacrilege for them to have destroyed such a masterpiece of creative wisdom. They did not look upon beauty as a snare of the devil to entrap weak mortals, but they saw in it divinity enrobed in garments of flesh.

But the Spartans did more than worship the beautiful and the useful; they took means to secure them; and this, not by hothouse culture, not by an indoor life, not by the arts of dress, not alone by gymnastics. They gave every boy and girl such an education as would secure to them bodily perfection. The education of the boys and girls consisted largely in listening to the thoughtful conversation of their elders, in attending and

practising the music of the bards, in dancing at the public dancing places. There was no strain on their minds, no forcing into immature heads wisdom fitted only for older persons. The youths were almost continually out of doors; every boy learned how to plant and to harvest the crops, every girl how to do household work. The highest lady in Sparta did menial work. The beautiful Helen was perfectly at home plying the loom; every girl could do every kind of labor required in a Spartan home. Nothing came amiss to them; but their work was done principally in the open air, exposed to the free light of the sun, and not over stoves and in heated apartments. They washed their clothing by the river's side, in trenches made for the purpose. Washing day was a gala day; not, as too often now, a day of severe trial. Without over-exertion, the Spartan women had sufficient active employment of both the mind and the body; their time never hung heavily on their hands.

Such a life produced the highest degree of health, and out of this health bubbled and blossomed a sweetness of temper which charmed all who came in contact with it. How could there fail to be a multitude of beautiful women in Sparta? The whole country of which Sparta was the centre was famous for them. Their beauty was not of the kind which we too often admire; in them there could be no beauty unless it was founded on perfect health, and this beauty continued long. Helen, celebrated in all times as being one of the most

beautiful women in Greece, was as handsome at fifty as at twenty; and this was almost the universal rule with all women. The Greek women were the finest that ever existed; not only physically, but intellectually. A race of such mothers could not fail to give birth to a noble race of men.

The Spartan idea of government was peculiar. The state was everything, the individual nothing. To protect and perfect the state the very best men were necessary, and all Spartan legislation, so far as it related to women, had this object in view,—the breeding of strong men; and the most important function of women was motherhood. But they were not slaves to men; they were free women. Enslaved women would not make good mothers. They wanted strong men, and so they insisted upon having strong women for their mothers; they wanted brave men, and so they insisted upon having courageous mothers to bear them; they wanted resolute men, and so they sought resolute mothers to give them birth; they wanted men of decision of character, and with power to act wisely and promptly in emergencies, and they would have no weak, pusillanimous creatures to give them birth. They believed even more than we do that as was the mother so will be the child.

The early training of both sexes prevented deception. In their exercises in the gymnasium the boys and the girls contested with each other in many ways in the

simplest clothing—indeed in very little clothing at all—and thus every citizen knew the physical development of every boy and girl, knew what they could do, how fast they could run, how far throw the javelin, how patiently endure pain. Every physical power stood out boldly. No feeble girl could pass herself off as robust, by the arts of dress, or other devices. No lazy boy could pass himself off as manly and brave. Long before marriage boys and girls knew each other's physical powers. Marriages were not made between them for the convenience of the parties themselves, but for the welfare of the state. Every healthy Spartan girl was obliged to marry; there was no excuse for her. Every sickly girl was obliged to abstain from marriage, and this, strange to say, she did willingly. There were, however, but few sickly girls in Sparta, for every child was examined soon after birth, and if found to be in any way deformed, or otherwise defective, its life was destroyed; and if, perchance, any feeble ones escaped this ordeal, their physical training was so severe as to develop their strength or extinguish their lives.

Girls were not allowed to marry young; they must be matured first. Boys and men were treated in the same way. No sickly young man could marry, but all healthy ones were compelled to do so; or if, perchance, they refused they were punished. Bachelors, after a certain age, were shut out of the society of women. They were not allowed to attend the gymnastic exer-

cises of the girls. They were even taken once a year, stripped of their clothing, and made to march in public, while songs were sung telling how disgraceful it was to disobey the Spartan law. Even the women were permitted to punish them with stripes as they dragged them around the altar on festal days. Men were also punished if they married too late, or if they married women not suitable to their physical development.

Here we have the Spartan system of physiological marriage and parentage, which was continued for five hundred years. No such perfect system had existed before nor since. It is true that it had serious defects. Its standard, like all human standards, had its imperfections; its humane side was almost totally lacking; but notwithstanding this, there are important lessons to be learned from it. Its value is to be seen in its fruits. What were these? For five hundred years there were produced in Greece a succession of the strongest and bravest men, and the most healthy and beautiful women that have ever existed on the face of the earth. These men maintained the supremacy of their government during all of this time by sheer force and by implicit obedience to law.

It may be thought that the perfect freedom of girls to go where and live as they pleased, their free intercourse with the boys in the gymnasium, with only the slightest clothing, would favor looseness of morals and a tendency to licentiousness; but history teaches us that

in the halcyon days of Sparta such a thing as adultery was almost unknown. Its frequency was as nothing to what it is when the sexes are separated in education, and an almost impassable barrier erected between them in social life. In this all history agrees that Spartan women were pure. Plutarch tells a story of a stranger who inquired of a well-known Spartan citizen "what punishment there was for adulterers." To this the citizen replied: "There is no adulterer in our country." The stranger said, "What if there should be a case?" The citizen made the proud and remarkable answer: "He must pay a bull so large that stooping over Taygetus he may drink out of the Eurotas." The stranger said: "But how could such a bull be found?" The citizen replied: "As easy as an adulterer in Sparta."

We must remember, however, that certain of their practices would not be tolerated with us. In case of disease, in order to raise healthy children, the sickly man was allowed to lend his wife to a stranger. In a few cases one woman had two husbands, and one instance is recorded of a man having two wives; but all such cases were exceptional. As a rule, the wife was unusually true to the husband, and the husband fond and proud of his wife. How could it be otherwise if she were healthy and beautiful, and possessed that sweetness of temper which health always brings?

No one desires to revive Spartanism in modern times, but we may learn lessons from it of the greatest value.

Even its defects may teach us what to avoid. Its chief defect was the fact that it regarded women too much as mothers and too little as women. They were developed mainly to this end, and when the age for bearing and caring for the child ceased, women had little else to do. Then she might become dissipated if she chose, and in time she did. It is a sad story how Sparta fell from her high state, how Lycurgan laws were relaxed, how there was a great struggle between good and evil, and how, finally, Spartan women sank to a low level, were not esteemed by men, were not beautiful or strong. All this the student of history will read and ponder over, but it does not further concern our subject.

CHAPTER VIII.

SCIENCE APPLIED TO IMPROVING ANIMALS, PLANTS, AND MAN.

In the year 1758 there was born at Wormly Grange, England, a man named Thomas Andrew Knight, whose life was devoted to the study of vegetable and animal physiology, and to horticulture. So little was known on these subjects before his time that he may almost be considered as the founder of these sciences. He contributed many papers to the transactions of the Royal Society, and anticipated several of the doctrines since taught by Darwin. He studied carefully the propagation of fruit trees, and his discoveries in relation to the improvement of fruits, put in practice by himself and others, have given us greatly improved apples and pears. Mr. Knight also stood at the head of that list of scientific breeders of domestic animals which in the 18th and beginning of the 19th century did so much to improve the breeds, and gave to the world those magnificent varieties of cattle and sheep which are to-day famous over all the civilized world. Mr. Knight died in 1836; but his works are to-day standard, and much read

and quoted by all naturalists. Mr. Allibone says of him, that no man contributed so much as he to improve our domestic animals and plants. In reading Mr. Knight's letters one is struck by two paragraphs, which, undoubtedly, have an important bearing on the subject of physiological marriage. One of these paragraphs relates to himself, and is as follows:

"If I were to be born again I should like to descend, as I do on my mother's side, from a healthy race, whose station in society had been through many generations a little above that of peasants, and from a father whose mind, as those of his ancestry, had been much exercised in arguments of various kinds." The other quotation relates to an important principle. In it Mr. Knight says: "The most powerful human minds will be found to originate from parents of different hereditary constitution. I have witnessed," he adds, "the bad effect of marriage between two persons very similar to each other in character and color, and springing from ancestry of similar character."

There is a vague belief, common among the more intelligent of men, that persons of a great similarity of temperament and character should not marry; but so little is it a conviction, that we see this error which Mr. Knight condemns repeated in a very large number of the marriages which take place in every community. According to Mr. Knight, two persons who are formed alike, who look alike, who have the same complexion,

the same colored hair and eyes, the same form, the same general characteristics, are not physiologically adapted to each other, and their offspring will suffer if they marry.

Farther, it is a law pretty well understood in animals and men that the offspring take the external form and frame, force of character and intellect, from the father more than from the mother; and the vital organs, the lungs and the stomach, together with the moral nature, more from the mother than from the father. So for the most physiological marriage we must insist that the father have a good frame, well developed muscles, a strong heart, energy, ambition, and thoughtfulness; and the mother good digestion, pure, rich blood, good sense, strong love for home and children, and a highly moral nature; and if there is any defect on the part of either, it should be in some part of the organism to which the party having the defect does not contribute in so high a degree. To illustrate: The blood is a fluid which it is highly important should exist in a pure, rich state in every person, if that person wishes to possess good health and enjoy life. Now, if the mother has good digestion and good blood, the child will be more likely to be similarly conditioned than if the mother has poor digestion and thin blood. Either parent, however, may contribute and modify any part of the body, if the other is defective in that part; so that if the father is defective in form and muscular development, the mother may

mould these organs; but this is not so natural or desirable.

In order, therefore, that each parent shall contribute most naturally, there must be a proper adaptation as regards age; and in this respect the wife should be the younger. The difference should not be less than one year nor more than seven or eight; probably from three to six years' difference in age would be best. The most healthy and intellectual children are born of mothers between 25 and 35 years, and of fathers between 30 and 40 years of age. If the father is very old and the mother young he does not contribute to the moulding of the frame of the child, and in giving it energy and character; but the mother does this, and rarely would a child born of such a union be well developed physically, or possess a harmonious intellectual nature.

The average stature of a man is about three inches greater than that of woman, and in the physiological marriage any great deviation from this should be avoided. A very tall man should not marry a very short woman, a very large man should not marry a very slight woman. It is true that very tall men are sometimes attracted to short women, and slim men to stout women; and perhaps nature indicates in such cases the best way to restore the harmony, but still such unions are not strictly physiological. The man should have broader shoulders than the woman, and the woman should possess more expanded hips than the man. The

latter is of great importance for the welfare of the children.

Although women, as a rule, do not contribute so much of the muscular system as man to their offspring, yet from this it must not be inferred that the mother can to advantage lead a sedentary life without injury to her offspring; and here is one of the dangers which men run in seeking for wives the daughters of the wealthy, providing these daughters are educated in the accomplishments only and excused from that labor which improves the mind and strengthens the character.

The strongest children are born of mothers who can and do work with their hands. Too much labor or drudgery, however, is not beneficial; but even this is better than idleness. Walker says in his work on intermarriage, "Any excessive employment of the muscular or intellectual organs of woman so much unfits her for the highest motherhood." And he might have added that laziness and effeminacy unfit both sexes in a very high degree for parentage.

The age at which a physiological marriage should be consummated is after maturity of the body has been attained. If before this, the children will not be as highly organized as they might be. Marriages between very young persons are decidedly objectionable.

There are many families which are not prolific and have few children, and these with difficulty. In such cases there is danger, instead of rearing healthy chil-

dren, of extinction. Galton mentions this in relation to heiresses. An heiress in England would be an only child and a daughter. He says that "intermarriage with an heiress is a notable agent in the extinction of families." Where there is only one child, the thought of Galton is, that the family is not prolific and may die out; but this is not always the case, for the parents may have died young, or other children may have been born. Darwin mentions the case of a healthy man with white hair who married a woman with very dark hair, and nine children were born blind. He seems to think that such unions are not desirable.

At the present time we have but little idea of how the human race might be improved by attention to the laws of suitable selection in intermarriage. In the rearing of domestic animals there is never any difficulty in producing any change of form or color which fashion demands. The following extract from Darwin will serve to show what may be accomplished in this direction.

"Few persons, except breeders, are aware of the systematic care taken in selecting animals, and of the necessity of having a clear and almost prophetic vision into futurity. Lord Spencer's skill and judgment were well known, and he writes: 'It is therefore very desirable, before any man commences to breed either cattle or sheep, that he should make up his mind to the shape and qualities he wishes to obtain, and steadily

pursue this object.' Lord Somerville, in speaking of the marvellous improvement of the new Leicester sheep effected by Bakewell and his successors, says: 'It would seem as if they had at first drawn a perfect form, and then given it life.' Youatt urges the necessity of annually drafting each flock, as many animals will certainly degenerate from the standard of excellence which the breeder has established in his own mind. Even with a bird of so little importance as the canary, long ago [1780–1790] rules were established, and a standard of perfection was fixed, according to which the London fanciers tried to breed the several sub-varieties. A great winner of prizes at the pigeon-shows, in describing the short-faced almond tumbler, says: 'There are many first-rate fanciers who are particularly partial to what is called the goldfinch beak, which is very beautiful; others say, take a full-sized round cherry, then take a barley-corn, and judiciously placing and thrusting it into the cherry form, as it were, your beak; and that is not all, for it will form a good head and beak, provided, as I said before, it is judiciously done; others take an oat; but as I think the goldfinch beak the handsomest, I would advise the inexperienced fancier to get the head of a goldfinch and keep it by him for his observation.' Wonderfully as is the beak of the rock pigeon and goldfinch, undoubtedly, as far as external shape and proportions are concerned, the end has been mainly gained by scientific propagation.

"Not only should our animals be examined with the greatest care whilst alive, but, as Anderson remarks, their carcases should be scrutinized, 'so as to breed from the descendants of such as, in the language of the butcher, cut up well.' The grain of the meat in cattle, and its being marbled with fat, and the greater or less accumulation of fat in the abdomen of our sheep, have been attended to with success. So with poultry. A writer speaking of Cochin-China fowls, which are said to differ much in the quality of their flesh, says: 'The best mode is to purchase two young brother cocks, kill, dress, and serve up one; if he be indifferent, similarly dispose of the other, and try again; if, however, he be fine and well-flavored, his brother will not be amiss for breeding purposes for the table.'

"Again, hear what an excellent judge of pigs says: 'The legs should be no longer than just to prevent the animal's belly from trailing on the ground. The leg is the least profitable portion of the hog, and we therefore require no more of it than is absolutely necessary for the support of the rest.' Let any one compare the wild boar with any improved breed, and he will see how effectually the legs have been shortened. What methodical selection has effected for our animals is sufficiently proved by the variety displayed at our annual exhibitions."

Thus it is seen that whatever views may be entertained concerning the origin of our domestic plants and animals, there is no doubt that breeders have always

proceeded on one principle, *to select the best individuals of each generation and pair them.* This he does, however, on certain principles which it may be proper to consider in brief in this connection. They naturally arrange themselves under three distinct divisions: 1, heredity; 2, variability; 3, selection. Two of these are natural divisions, and the third is artificial.

If there was no law of heredity, if animals and plants did not transmit their characters to their offspring, then it would be a waste of time to try to improve either. The horticulturist takes advantage of this law in propagating many plants by cuttings, in which case the original plant is reproduced in all its detail. The grape is an illustration of this. And so is the begonia, which reproduces the original plant in all its details. A lobster which has lost a claw reproduces one exactly like the lost one in form and structure. But heredity alone is not enough; for if plants and animals reproduced in detail the characters of their parents, there would still be no improvement; and here variability comes in as an important aid. Variability is quite as necessary a factor of breeding as heredity. Some slight change from the parent form is constantly going on, especially in those organisms propagated by sexual generation. This variability has its origin, no doubt, in the changed circumstances and surroundings of life. An improved climate, more and better food, a higher standard of education, a more perfect degree of happiness allow of variation for

the better. Less favorable conditions, a removal to an unfavorable climate, privation, want and misery, ill-health, allow of variations unfavorable to improvement and cause degeneration. And here comes in the principle of selection, which may be considered more in detail.

Selection is the process by which the best specimens of one generation are chosen as parents for the succeeding one. This implies that the selection must be a wise one, and that the breeder has in his mind an idea of what he wishes to create, the ideal form he would mould. This subject naturally falls under two divisions—an understanding of individual differences and pairing.

It requires the highest powers of discrimination to decide on the differences of different animals. Sir John Seabright is said to have spent several days in weighing the rival merits of half a dozen birds before pairing them. In Germany the best fine wool sheep-farmers employ experts to select the best of their flocks for breeding purposes. Not only do these experts examine carefully the external form, but also internal and constitutional peculiarities. There is, of course, some danger of injuring a flock by this course if these experts aim at improvement in only one particular. Bakewell, who was the first methodical breeder we know of, bred almost entirely to secure early maturity and fattening qualities, and this he did to a most incredible degree. His successors were obliged to retrace his steps and breed a leaner race.

The economic breeder does not go to such extremes. Money considerations with him outweigh all others, so he is not misled by caprice or fashion.

Under the head of pairing, which also includes crossing, breeders proceed on the principle that it seems to be advantageous to the offspring that only one of the parents shall possess the most desirable qualities in a very high degree; and so individuals possessing points of excellence are by the best breeders paired with those well developed in other directions, and here the highest skill is necessary. By following these principles, and by occasional crossing of breeds, wonderful results have been produced.

Francis Darwin in speaking on this subject says: "An unperceived divergence of character will arise whenever men actuated by some vague belief in heredity begin to select the best individuals for reproductive purposes. Each man will unconsciously take a slightly different standard of excellence from his neighbor, and thus his flock will gradually begin to differ from theirs. Now there can be no doubt that an amount of selection sufficient for this purpose must have been practised from a very remote period. Youatt, after an examination of the passages of the Old Testament bearing on this point, asserts that some of the best principles of breeding were then understood."

The same author adds further, "The ancestors of nations now civilized must have passed through stages

in which they resembled the savages of the present day; therefore it may fairly be assumed that customs which are found among lowly-developed savages are of great antiquity. Few faces are more barbarous than the Australians, yet even they take pains in the breeding of their dogs, matching the finest together and providing good food for the mother in order that the young may be well nurtured."

In giving so much concerning the principles of breeding in animals there has been no thought of degrading the subject of marriage, but only to draw from the lessons learned such hints and wisdom as may eventually aid in improving the human race.

CHAPTER IX.

THE MIXING OF RACES.

THE mixing of one race with another suitably adapted to it in general characteristics is an important but not an indispensable condition of physiological marriage. It is more essential for the inhabitants of the small countries of Europe than for America. Here we have so many races in the process of becoming homogeneous, that it will be a long time before it will be necessary to mix our blood by marriage with other nationalities more than we are now doing. We are gradually forming a new race with new characteristics. What it will finally be no one can foretell. Climate and food in the beginning form the character and bodily constitution of the people, which afterward is perpetuated by inheritance from one generation to another. But in spite of both these, our race will be made up of those physical and moral peculiarities which constitute the leading features of the ancestors of the different races which have migrated to our shores. Where two races unite, they exert a reciprocal influence on each other in accordance with the laws of their organization and external circumstances. If we admit that the character of a population

is maintained and improved, or degraded, by inheritance, it becomes self-evident that it is also modified and changed by blending with foreigners; and the foreign element will have an influence in proportion to its magnitude and personal vitality. Dr. Edward Reich says: "A highly developed race, with sharply defined peculiarities, will essentially change the character of a lower race, even when the latter is the more numerous; while, on the other hand, a great majority of individuals of a lower race will be required to exert a prevailing influence on one more highly developed.

"Those governments which have endeavored to exclude immigration have been influenced by the fact that an admixture of foreigners changes the organic conditions, and hence causes a deterioration of the moral and intellectual character of the people, thus endangering the stability of the old order of things. To illustrate, a square-headed race lives happily and contented under an established political and religious system, which, however, is exceedingly obnoxious to the oval-headed race. If now a blending of these races occurs, and the government is determined to maintain the old order of things, there will come sooner or later a revolution, or perhaps a war of races. In the same proportion in which the oval heads are admitted, governments must consent to modifications in their forms, and enter upon a new career; for the crossing of races produces a new character to which the old institutions are not adapted.

Political and religious persecution exerted a powerful influence upon the national character of Europeans. By it people of all classes often united; men of the highest talent were introduced into new communities. It may with confidence be asserted that gifted persons exert a twofold influence upon the communities in which they settle,—first, by intermarriage; and second, by virtue of their knowledge and skill."

Francis Galton makes some remarks which are very instructive for our purpose. We quote as follows: "The policy of the religious world in Europe was exerted in another direction with not less cruel effect on the nature of future generations by means of persecutions which brought thousands of the foremost thinkers and men of political aptitude to the scaffold, or imprisoned them during a large part of their manhood, or drove them as emigrants into other lands. In each of these cases the check upon leaving an issue was considerable. Hence, the Roman church, having captured all the gentle natures and condemned them to celibacy, made another sweep of her huge net to catch those who were the most fearless, truth-seeking and intelligent in their modes of thought, and therefore the most suitable parents of a higher civilization, and put a strong check, if not a direct stop, to their progeny. Those she reserved on these occasions to breed the coming generations were the servile, the indifferent, and again the stupid."

But when any nation banishes from its borders its best minds because their thought is far in advance of their age, science and philosophy, morality and religion are seriously affected and suffer, and so also does the character of the population. Almost every European country has, during some portion of its existence, banished its best minds. The persecution which drove the Puritan Fathers from Europe to America was very beneficial to this country, but very injurious to their fatherland. The spirit of persecution in any country keeps alive and increases the growth of the lower organs of the brain, gradually developing them to enormous proportions, and this growth is transmitted by inheritance from parent to child. The growth of the lower combative faculties is at the expense of the intellectual and higher moral sentiments, and the development of the upper brain. In the course of generations this perversion of development is plainly to be seen. Dr. Reich, previously quoted, says: "When the true mental leaders of a nation are taken from the undercurrents of its intellectual life, or checked, delusion takes the place of reason, and passion that of noble impulse, immoral practices increase, and the general type of character sinks to a lower level. Physiognomy is mainly dependent upon morality and intelligence; and hence, people whose intellectual life has been destroyed will, even without the spread of religious fanaticism, lose their former noble features; and if subjected to a political

system which permits only sensual enjoyments, and to a brutalizing church system, will take on merely animal physiognomy and transmit it in an exaggerated form to their descendants."

Ernest Haeckel lays down as nature's the following laws of inheritance: "All characteristics acquired by the organism during its individual existence, and which its ancestors did not possess, may, under favorable circumstances, be transmitted to posterity." He further says: "All such characteristics will be transmitted with a certainty and fulness proportioned to the suitability of the conditions under which they were acquired and the length of time which these conditions continue to act upon succeeding generations. All organisms are capable of transmitting such acquired peculiarities exactly in the form in which they were received, and to the same parts of the body. All organisms are capable of transmitting acquired peculiarities in such a manner as to reappear in descendants at exactly the same period of life in which they were acquired."

The law-makers, moral reformers and teachers of every age and nation have labored with zeal to check evils which were continually threatening society, but they have failed to control and direct the laws of propagation and improvement of race, and hence their efforts have only partly succeeded.

Dr. Edward Reich once more says: "In order that

a family may maintain its existence and integrity through successive generations, it is essential that the health of its members should be preserved, that its external circumstances should be favorable, and that its people should be refreshed by suitable intermarriages with strangers. Where the conditions are the reverse of this, there must follow physical and moral degeneracy and perhaps final extinction.

"Small states isolated by peculiar laws, or otherwise, from surrounding communities are necessarily limited with regard to marriage. If now within such a State communities and distinctions of caste are strictly maintained, and alliance out of caste be sternly condemned, the proportion of marriages between blood relations will reach its maximum, and the attendant evils will be proportionately apparent. Family defects, both physical and moral, will be exaggerated from generation to generation in process of time, and the entire social and political system will become a diseased caricature of its former healthy condition.

"When people of a weak intellect intermarry within the circle of near relationship, they transmit with their purely physical defects also their conformation of brain which is the cause of their mental imbecility. If now the descendants of such persons continue to propagate among themselves there results a half-idiotic race, which, so long as it maintains its existence at all, must deviate more and more from the normal human type. In most

small European states the ruling families are of that class, and the baneful effects of their ignorance and bigotry are apparent in every feature of the social and political system of all which they dominate. Every free thought, every noble aspiration, every attempt at progress, encounters in them a stolid, unreflecting opposition. The condition of mind before referred to is allied to cretinism and idiotcy. It is important, however, to observe that not all the offspring of such marriages in small states are to be regarded as weak-minded or incapable. A considerable proportion display a marked ability, being distinguished for their attainment of science, art, and practical industries.

"These, however, are exceptions; as a rule such a marriage is tending to physical and moral degeneracy. The popular character as a whole, where the system prevails, is that of intellectual inertness, bigotry and aristocratic conservatism. The exceptional cases are those in which parents, themselves closely related, are in all respects vigorous and healthy. Such parents transmit only excellent qualities, no physical or moral defect appearing in the offspring. August Voisin has made a special study of a highly instructive case of this kind, viz., that existing in the district of Batz, upon the Lower Loire, in the west of France. Here a little community of scarcely 4,000 persons has been isolated from the world, so far as marriage is concerned, for many generations, under a system of the closest intermarriage of

blood relations. These people are described as physically and mentally sound. Inherited diseases are said to be unknown; the moral, social and hygienic conditions are excellent. Domestic happiness prevails, and the intellectual life is highly developed. Such instances of exemption from injurious consequences are calculated to mislead. Let us rather inquire into the causes that have produced so striking an exceptional case. We shall find them in the climate, the external conditions of life and occupation, and the constitution of the people. These, in this little community, are, and always have been, of the most favorable character, and hence in accordance with the statement there is a remarkable freedom from disease and degeneracy.

"Let us now refer to the smaller inland states. Here we find a condition of things of a directly opposite character. Physical disease and moral depravity are continually exaggerated and transmitted by the promiscuous intermarriage of relatives. Experience has indeed shown that a perfectly healthy community, maintaining within itself pure morals and normal habits of life, may closely intermarry with impunity, and even in some cases with positive benefit. But it is equally clear that opposite conditions will lead to opposite results; that is to say, an unsound and morally depraved people will transmit their weakness in an exaggerated form, leading to final degeneracy and ruin; and this with all the more certainty and directness in proportion as the community

is cut off from contact with the external world, and limited in numbers. In small inland states the latter condition is the one uniformly found complete. Physical and moral health is in such states physically impossible. Independent of the marriage system there are two other important causes of the perennial decay and inferiority which exists. These are first, the material poverty of the masses, which prevents the application of hygiene, and second, the moral hypocrisy which pervades all ranks and debases the character. These two circumstances are calculated in the highest degree to perpetuate the evils resulting from marriage within the circle of near relationship."

Francis Davay has made a thorough study of both the causes and consequences of the marriage of near relatives. He says: "The organic decay and general lowering of the character which results from such alliances are apparent not only to the medical profession but to all observers. There is with successive generations a great deal of the fading of beauty and wasting of the features, followed by the repulsive and diseased expression which especially characterizes the victims of scrofula and rachitis. There is also abundant evidence that such marriages tend to produce insanity and mental imbecility in the offspring.

"The political system of most small states bears the stamp of mental incapacity, while the moral system is characterized by that hypocrisy which accompanies

scrofula and rachitis. The physical and moral evils that exist in small states are only to be remedied by preventing their transmission to posterity, for they are inherent in the physical and mental constitution, and can only cease with the life of those in whom they exist. This end is to be attained partly by wise marriage laws, but most effectually by the union of those small states with large ones."

The same evil results which have followed intermarriage in the small countries of Europe may, and often does, follow by intermarriage in neighborhoods and small towns in any country. Even though the parties are not related by blood, they have, perhaps, the same education, habits of thought, and methods of life. The tendency, therefore, is to make them too much alike in character and physical conformation. If the people of one town will seek their partners for life in another distant town whenever there is any danger from neighborhood intermarriage, the evils mentioned may be avoided.

CHAPTER X.

DIFFICULTIES IN THE WAY.

WE will in this chapter consider some of the difficulties in the way which prevent a physiological marriage in so many cases. The first one is the very great ignorance which prevails on the subject, and the perfect indifference to it by a majority of persons. A case in point will illustrate. There once lived in one of the New England states a wealthy gentleman who was a breeder of domestic animals, especially horses and cattle. In breeding these animals he showed extensive knowledge of the art of crossing, and took the greatest pains to match his animals so that the progeny might be of very fine quality. His object, of course, was to breed animals that would bring a good price in market. In this respect he succeeded. But did he use equal care in his own marriage, so that his own offspring should be as good, or better than himself? Not at all! He married a woman whose blood was saturated through and through with insanity. She became an inmate of an insane asylum, and her children were very defective, bodily and mentally. He was honored only by his fine horses and cattle. He was dishonored in his family.

Another case is of peculiar interest. A man seri-

ously deformed in his hands and feet was married to a New England woman of intelligence and good family. Three children were the result of this union, each one deformed, if anything worse than the father. The mother was asked why she married a deformed man, and thus became the mother of deformed children? She replied, "That it never occurred to her that her offspring would inherit the father's defects."

These are perhaps extreme cases; but on every hand we see similar ones, owing largely to ignorance and indifference on the part of the young. For this reason parents should inform their children at the proper age of the importance of the subject, and place in their hands such books as will aid them to become intelligent on a matter involving such important results.

Still another difficulty in the way is the blindness of the passion of love. When once awakened between two persons they seem to lose their judgment, to a great extent idealize each other, and refuse to listen to the voice of reason. Another difficulty is the tendency of men to marry for money or position, and a similar tendency of parents to marry their daughters to men of wealth without regard to fitness of age, health or physical adaptation. Who has not known of a parent almost compelling a beautiful daughter to marry an old, decrepit man with great wealth, who could only father imperfect offspring, and refusing consent for her to marry a young but poor man whom she loved, and with whom she might have

been happy and reared fine children. Parents who do this can have no idea of the wrong they commit. Sometimes, however, the fault is with the daughters, who are willing to marry old rakes saturated with disease, if it will only bring them fine clothing, introduction to society and a life of indolence.

But the greatest of all difficulties in the way is one which we will now mention. It is the diseased condition of such a large portion of our race. The number of perfectly healthy persons is less than might be supposed. It is appalling to think how many there are who have tendencies to gout, rheumatism, epilepsy, insanity, consumption, neuralgia, and other diseases; how many with imperfect stomachs, lungs, hearts, brains, etc., so that the slightest indiscretion precipitates them into misery. It would be painful to enumerate the physical defects handed down from parents to child for generations. As we write these lines a gentleman tells me that he inherited the gout from an ancestor six generations back, and also that nearly all the descendants of that ancestor inherited it likewise. The marriages of six generations have not sufficed to remove the taint. Probably it will be inherited along the line of descent for hundreds of years to come. Then, again, take consumption; about 100,000 die of this disease every year. In many of the States one-sixth of all the deaths are from this one malady. No epidemic of cholera or yellow fever slays so many. War, with all its horrors, does not cause so

much pain, sorrow and anguish. It is daily torture for months and years, dying inch by inch. We have now a population of about 50,000,000 of people, and it is safe to say that half of them have a tendency to some physical defect which renders them more or less unsound. With so much disease in the world is it not almost impossible for the multitude to marry physiologically? This is a sad commentary on our methods of living. It shows conclusively that they are unhygienic and unphysiological. And we go on propagating this condition. Part of this evil is the result of our time. This is an age of progress and of philanthropy, and medical science, without hitherto doing much to prevent disease, has done everything to patch up broken constitutions and save life. Without renovating the blood or altering the habits of men and women, it has pieced out their lives, and given them a chance to propagate disease. Most of us are spendthrifts of vital riches. Few aim, even in the slightest degree, at family improvement. Have we not gone far enough in this downward course of race deterioration? Some have recommended as a remedy prohibitory laws which should regulate marriage and restrict it within certain limits; but this could only be carried out to a limited extent. We might properly apply restrictions to marriages of paupers, criminals and scoundrels. We must trust mainly to the enlightenment and moral susceptibility percolating downward, and in time permeating all ranks of men and women.

Mr. George Darwin in discussing this subject says: "Further changes may be made, by providing that proof of having never suffered from insanity should be a prerequisite to marriage. And one may hope that in the distant future the parties may further be required to show that their parents, or even remote ancestors and collaterals, are likewise untainted; this, too, is the more important as it has been shown by Dr. Prosper Lucas that innate characters are more strongly inheritable than those acquired by the individual. The possibility, however, of the introduction of such measures as these is so distant that it does not seem worth while to consider them further than by pointing them out as goals, on the ultimate attainment of which our attention should be turned.

"Besides the mental qualities of man, his bodily frame is urgently in want of improvement, and for this end we also need a substitute to replace the weakened influence of natural selection. *Mens sana in corpore sano*—so that even neglecting the consideration that by our carelessness we are laying by a heritage of suffering for unborn generations, we can only fully provide for the advancement of the human race by paying attention to physical qualities. There can be no doubt that the health of large numbers in our present highly civilized condition is alarmingly feeble, and that the advance of medical science will, by the preservation of the weak, only aggravate the evil for future generations. The

extent to which, in the present age, the weak are placed almost on a par with the strong in the struggle for life, has been pointed out in the 'Descent of Man.'

"There are many diseases which seem to require attention on account of their strong hereditary characters. The lungs, the digestive canal, the liver, and organs of generation may be the origin of the most various forms of derangement, and give rise to convulsions, hysteria, chorea, and epilepsy; and all of these diseases are hereditary and transformable *inter se.* Gout, scrofula, rheumatism; tuberculous, herpetic and syphilitic diseases are intimately related, and all are strongly heritable. A gouty constitution may develop itself in the form of asthma, dyspepsia, epilepsy, apoplexy, paralysis, madness, and many other diseases. That consumption runs in families is too notorious to need any comment. We shall, to a certain extent, in combating insanity and idiotcy, combat all of these diseases, since they are mostly commutable with mental incapacity; but we can only make a really successful attack by compelling the production, before marriage, of a clean bill of health in the party, and ultimately in his parents and ancestors. Syphilis would have to be included, in case, as is only too likely, medical science and other preventive legislation should fail in confining its ravages to small limits.

"At the end of his book, Dr. Lucas gives his opinion, as the result of his labors, that, in contracting mar-

riage, union should be avoided with persons near akin, with those afflicted with epilepsy, mental incapacity, phthisis, scrofula, etc., as well as with those whose parents, grandparents, uncles or aunts are so affected; and adds, that it is our duty not only to search for persons exempt from these diseases, but those whose personal and family constitution is good.

"The ultimate restrictions, then, to liberty of marriage would be (besides those already in force, less the absurd laws against marriage with a deceased wife's sister or husband's brother): 1. Divorce on the appearance of certain diseases. 2. The passing of a medical examination for this same class of diseases. 3. The production of an untainted pedigree.

"The examination might be modelled on that in force in Germany for military service, where a man is not ultimately rejected until he has been refused in three successive years. Could such legislation come into force, coupled with some such a scheme as that proposed by Mr. Galton, not only might a 'cubit be added to our stature,' but the capacity for happiness in the world might be largely augmented by the destruction of that most potent cause of unhappiness, ill health; several years might be added to human life, our ability for work and mental power immensely increased, and the coming race might end by becoming as much superior to ourselves in mind and body as the race-horse is superior in form to a shaggy pony."

As the views of the author of "The Descent of Man" on the question of natural selection and its effect on civilization have a special bearing on this subject, and seem especially appropriate here, and as he has given the results of his studies quite fully in the last edition of his work, I have thought it wise to present them as the concluding part of this chapter. Mr. Darwin does not give his own views merely, but quotes freely from others who hold similar opinions, and I do not know where I could find so masterly a presentation of this subject as he has given. I will not detract from its interest by condensation, but give it in his own words. He says: "I have hitherto only considered the advancement of man from a semi-human condition to that of the modern savage. But some remarks on the action of natural selection on civilized nations may be worth adding. This subject has been ably discussed by Mr. W. R. Greg, and previously by Mr. Wallace and Mr. Galton. Most of my remarks are taken from these three authors. With savages, the weak in body or mind are soon eliminated; and those that survive commonly exhibit a vigorous state of health. We civilized men, on the other hand, do our utmost to check the process of elimination; we build asylums for the imbecile, the maimed, and the sick; we institute poor-laws; and our medical men exert their utmost skill to save the life of every one to the last moment. There is reason to believe that vaccination has preserved thousands, who from a weak constitution

would formerly have succumbed to small-pox. Thus the weak members of civilized societies propagate their kind. No one who has attended to the breeding of domestic animals will doubt that this must be highly injurious to the race of man. It is surprising how soon a want of care, or care wrongly directed, leads to the degeneration of a domestic race; but excepting in the case of man himself, hardly any one is so ignorant as to allow his worst animals to breed.

"The aid which we feel impelled to give to the helpless is mainly an incidental result of the instinct of sympathy, which was originally acquired as a part of the social instincts, but subsequently rendered, in the manner previously indicated, more tender and more widely diffused. Nor could we check our sympathy, even at the urging of hard reason, without deterioration in the noblest part of our nature. The surgeon may harden himself whilst performing an operation, for he knows that he is acting for the good of his patient; but if we were intentionally to neglect the weak and helpless, it could only be for a contingent benefit, with an overwhelming present evil. We must therefore bear the undoubtedly bad effects of the weak surviving and propagating their kind; but there appears to be at least one check in steady action, namely, that the weaker and inferior members of society do not marry so freely as the sound; and this check might be indefinitely increased by the weak in body or mind refraining from marriage, though this is more to be hoped for than expected.

"In every country in which a large standing army is kept up, the finest young men are taken by the conscription or are enlisted. They are thus exposed to early death during war, are often tempted into vice, and are prevented from marrying during the prime of life. On the other hand the shorter and feebler men, with poor constitutions, are left at home, and consequently have a much better chance of marrying and propagating their kind.

"Man accumulates property and bequeathes it to his children, so that the children of the rich have an advantage over the poor in the race for success, independently of bodily or mental superiority. On the other hand, the children of parents who are short-lived, and therefore on an average deficient in health and vigor, come into their property sooner than other children, and will be likely to marry earlier, and leave a larger number of offspring to inherit their inferior constitutions. But the inheritance of property by itself is very far from an evil; for without the accumulation of capital the arts could not progress; and it is chiefly through their power that the civilized races have extended, and are now everywhere extending their range, so as to take the place of the lower races. Nor does the moderate accumulation of wealth interfere with the process of selection. When a poor man becomes moderately rich, his children enter trades or professions in which there is struggle enough, so that the able in body and mind succeed best. The

presence of a body of well constructed men, who have not to labor for their daily bread, is important to a degree which cannot be over-estimated; as all high intellectual work is carried on by them, and on such work material progress of all kinds mainly depends, not to mention other and higher advantages. No doubt wealth, when very great, tends to convert men into useless drones, but their number is never large; and some degree of elimination here occurs, for we daily see rich men, who happen to be fools or profligate, squandering away their wealth.

"Primogeniture with entailed estates is a more direct evil, though it may formerly have been a great advantage by the creation of a dominant class, and any government is better than none. Most eldest sons, though they may be weak in body or mind, marry, whilst the younger sons, however superior in these respects, do not so generally marry. Nor can worthless sons with entailed estates squander their wealth. But here, as elsewhere, the relations of civilized life are so complex that some compensatory checks intervene. The men who are rich through primogeniture are able to select generation after generation the more beautiful and charming women; and these must generally be healthy in body and active in mind. The evil consequences, such as they may be, of the continued preservation of the same line of descent, without any selection, are checked by men of rank always wishing to increase their wealth and power; and

this they effect by marrying heiresses. But the daughters of parents who have produced single children are themselves, as Mr. Galton has shown, apt to be sterile; and thus noble families are continually cut off in the direct line, and their wealth flows into some side channel; but unfortunately this channel is not determined by superiority of any kind.

"Although civilization thus checks in many ways the action of natural selection, it apparently favors the better development of the body by means of a good food and the freedom from occasional hardships. This may be inferred from civilized men having been found, wherever compared, to be physically stronger than savages. They appear also to have equal powers of endurance, as has been proved in many adventurous expeditions. Even the great luxury of the rich can be but little detrimental; for the expectation of life of our aristocracy, at all ages and of both sexes, is very little inferior to that of healthy English lives in the lower classes.

"We will now look to the intellectual faculties. If in each grade of society the members were divided into two equal bodies, the one including the intellectually superior and the other the inferior, there can be but little doubt that the former would succeed best in all occupations, and rear a greater number of children. Even in the lowest walks of life, skill and ability must be of some advantage; though in many occupations, owing to the great division of labor, a very small one. Hence in civ-

ilized nations there will be some tendency to an increase both in the number and in the standard of the intellectually able; but I do not wish to assert that this tendency may not be more than counterbalanced in other ways, as by the multiplication of the reckless and improvident; but even to such as these, ability must be some advantage.

"It has often been objected to views like the foregoing, that the most eminent men who have ever lived have left no offspring to inherit their great intellect. Mr. Galton says, 'I regret I am unable to solve the simple question whether, and how far, men and women who are prodigies of genius are infertile. I have, however, shown that men of eminence are by no means so.' Great law-givers, the founders of beneficent religions, great philosophers and discoverers in science, aid the progress of mankind in a far higher degree by their works than by leaving a numerous progeny. In the case of corporeal structures, it is the selection of the slightly better-endowed and the elimination of the slightly less well-endowed individuals, and not the preservation of strongly-marked and rare anomalies, that leads to the advancement of a species. So it will be with the intellectual faculties, since the somewhat abler men in each grade of society succeed rather better than the less able, and consequently increase in number, if not otherwise prevented. When in any nation the standard of intellect and the number of intellectual men have increased

we may expect, from the law of the deviation from an average, that prodigies of genius will, as shown by Mr. Galton, appear somewhat more frequently than before.

"In regard to the moral qualities, some elimination of the worst dispositions is always in progress, even in the most civilized nations. Malefactors are executed, or imprisoned for long periods, so that they cannot freely transmit their bad qualities. Melancholic and insane persons are confined, or commit suicide. Violent and quarrelsome men often come to a bloody end. The restless, who will not follow any steady occupation—and this relic of barbarism is a great check to civilization—emigrate to newly-settled countries, where they prove useful pioneers. Intemperance is so highly destructive that the expectation of life of the intemperate, at the age of thirty for instance, is only 13·8 years; whilst for the rural laborers of England at the same age it is 40·59 years. Profligate women bear few children, and profligate men rarely marry; both suffer from disease. In the breeding of domestic animals, the elimination of those individuals, though few in number, which are in any marked manner inferior, is by no means an unimportant element towards success. This especially holds good with injurious characters which tend to reappear through reversion, such as blackness in sheep; and with mankind some of the worst dispositions, which occasionally without any assignable cause make their appearance in families, may perhaps be reversions to a savage state,

from which we are not removed by very many generations. This view seems indeed recognized in the common expression that such men are the black sheep of the family.

"With civilized nations, as far as an advanced standard of morality and an increased number of fairly good men are concerned, natural selection apparently effects but little, though the fundamental social instincts were originally thus gained. But I have already said enough, whilst treating of the lower races, on the causes which lead to the advance of morality—namely, the approbation of our fellow-men; the strengthening of our sympathies by habit; example and imitation; reason; experience, and even self-interest; instruction during youth, and religious feelings.

"A most important obstacle in civilized countries to an increase in the number of men of a superior class has been strongly insisted on by Mr. Greg and Mr. Galton —namely, the fact that the very poor and reckless, who are often degraded by vice, almost invariably marry early; whilst the careful and frugal, who are generally otherwise virtuous, marry late in life, so that they may be able to support themselves and their children in comfort. Those who marry early produce within a given period not only a greater number of generations, but, as shown by Dr. Duncan, they produce more children. The children, moreover, that are born by mothers during the prime of life are heavier and larger, and there-

fore probably more vigorous, than those born at other periods. Thus the reckless, degraded, and often vicious members of society, tend to increase at a quicker rate than the provident and generally virtuous members. Or, as Mr. Greg puts the case: 'The careless, squalid, unaspiring Irishman multiplies like rabbits; the frugal, foreseeing, self-respecting, ambitious Scot, stern in his morality, spiritual in his faith, sagacious and disciplined in his intelligence, passes his best years in struggle and in celibacy, marries late, and leaves few behind him. Given a land originally peopled by a thousand Saxons and a thousand Celts, and in a dozen generations five-sixths of the population would be Celts; but five-sixths of the property, of the power, of the intellect, would belong to the one-sixth of Saxons that remained. In the eternal "struggle for existence," it would be the inferior and *less*-favored race that had prevailed—and prevailed by virtue not of its good qualities, but of its faults.'

"There are, however, some checks to this downward tendency. We have seen that the intemperate suffer from a high rate of mortality, and the extremely profligate leave few offspring. The poorest classes crowd into towns, and it has been proved by Dr. Stark, from the statistics of ten years in Scotland, that at all ages the death-rate is higher in towns than in rural districts, 'and during the first five years of life the town death-rate is almost exactly double that of the rural districts.' As these returns include both the rich and the poor, no

doubt more than twice the number of births would be requisite to keep up the number of the very poor inhabitants in the towns, relatively to those in the country. With women, marriage at too early an age is highly injurious; for it has been found in France that 'twice as many wives under twenty die in the year as died out of the same number of the unmarried.' The mortality, also, of husbands under twenty is 'excessively high,' but what the cause of this may be seems doubtful. Lastly, if the men who prudently delay marrying until they can bring up their families in comfort were to select, as they often do, women in the prime of life, the rate of increase in the better class would be only slightly lessened.

"It was established from an enormous body of statistics, taken during 1853, that the unmarried men throughout France, between the ages of twenty and eighty, died in a much larger proportion than the married: for intance, out of every 1000 unmarried men, between the ages of twenty and thirty, 11·3 annually died, whilst of the married only 6·5 died. A similar law was proved to hold good, during the years of 1863 and 1864, with the entire population above the age of twenty in Scotland: for instance, out of every 1000 unmarried men, between the ages of twenty and thirty, 14·97 annually died, whilst of the unmarried only 7·24 died, that is, less than half. Dr. Stark remarks on this, 'Bachelorhood is more destructive to life than the most unwholesome trades, or than residence in an unwholesome house or district where

there has never been the most distant attempt at sanitary improvement.' He considers that the lessened mortality is the direct result of 'marriage, and the more regular domestic habits which attend that state.' He admits, however, that the intemperate, profligate and criminal classes, whose duration of life is low, do not commonly marry; and it must likewise be admitted that men with a weak constitution, ill health, or any great infirmity in body or mind, will often not wish to marry, or will be rejected. Dr. Stark seems to have come to the conclusion that marriage in itself is a main cause of prolonged life, from finding that aged married men still have a considerable advantage in this respect over the unmarried of the same advanced age; but every one must have known instances of men who with weak health during youth did not marry, and yet have survived to old age, though remaining weak, and therefore always with a lessened chance of life or of marrying. There is another remarkable circumstance which seems to support Dr. Stark's conclusion—namely, that widows and widowers in France suffer in comparison with the married a very heavy rate of mortality; but Dr. Farr attributes this to the poverty and evil habits consequent on the disruption of the family, and to grief. On the whole we may conclude with Dr. Farr that the less mortality of married than of unmarried men, which seems to be a general law, 'is mainly due to the constant elimination of imperfect types, and to the skilful selection of the finest individ-

uals out of each successive generation;' the selection relating only to the married state, and acting on all corporeal, intellectual and moral qualities. We may, therefore, infer that sound and good men who out of prudence remain for a time unmarried, do not suffer a high rate of mortality.

"If the various checks spoken of in the last two paragraphs, and perhaps others as yet unknown, do not prevent the reckless, the vicious and otherwise inferior members of society from increasing at a quicker rate than the better class of men, the nation will retrograde, as has too often occurred in the history of the world. We must remember that progress is no invariable rule. It is very difficult to say why one civilized nation rises, becomes more powerful, and spreads more widely than another; or why the same nation progresses more quickly at one time than at another. We can only say that it depends on an increase in the actual number of the population, on the number of the men endowed with high intellectual and moral faculties, as well as on their standard of excellence. Corporeal structure appears to have little influence, except so far as vigor of body leads to vigor of mind.

"It has been urged by several writers that as high intellectual powers are advantageous to a nation, the old Greeks, who stood some grades higher in intellect than any race that has ever existed, ought, if the power of natural selection were real, to have risen still higher

in the scale, increased in number, and stocked the whole of Europe. Here we have the tacit assumption, so often made with respect to corporeal structures, that there is some innate tendency towards continued development in mind and body. But development of all kinds depends on many concurrent favorable circumstances. Natural selection acts only tentatively. Individuals and races may have acquired certain indisputable advantages, and yet have perished from failing in other characters. The Greeks may have retrograded from a want of coherence between the many small states, from the small size of their whole country, from the practice of slavery, or from extreme sensuality; for they did not succumb until 'they were enervated and corrupt to the very core.' The western nations of Europe, who now so immeasureably surpass their former savage progenitors, and stand at the summit of civilization, owe little or none of their superiority to direct inheritance from the old Greeks, though they owe much to the written works of that wonderful people.

"Who can positively say why the Spanish nation, so dominant at one time, has been distanced in the race. The awakening of the nations of Europe from the dark ages is a still more perplexing problem. At that early period, as Mr. Galton has remarked, almost all the men of a gentle nature, those given to meditation or culture of the mind, had no refuge except in the bosom of a church which demanded celibacy; and this could hardly

fail to have had a deteriorating influence on each successive generation. During this same period the holy inquisition selected with extreme care the freest and boldest men in order to burn or imprison them. In Spain some of the best men—those who doubted and questioned, and without doubting there can be no progress —were eliminated during three centuries at the rate of a thousand a year. The evil which the Catholic Church has thus effected is incalculable, though no doubt counterbalanced to a certain, perhaps to a large, extent in other ways ; nevertheless, Europe has progressed at an unparalleled rate.

" The remarkable success of English as colonists, compared to other European nations, has been ascribed to their 'daring and persistent energy'—a result which is well illustrated by comparing the progress of the Canadians of English and French extraction ; but who can say how the English gained their energy? There is apparently much truth in the belief that the wonderful progress of the United States, as well as the character of the people, are the results of natural selection ; for the more energetic, restless, and courageous men from all parts of Europe have emigrated during the last ten or twelve generations to that great country, and have there succeeded best. Looking to the distant future, I do not think that the Rev. Mr. Zincke takes an exaggerated view when he says: 'All other series of events—as that which resulted in the culture of mind in Greece, and

that which resulted in the empire of Rome—only appear to have purpose and value when viewed in connection with, or rather as subsidiary to, ... the great stream of Anglo-Saxon emigration to the West." Obscure as is the problem of the advance of civilization, we can at least see that a nation which produced during a lengthened period the greatest number of highly intellectual, energetic, brave, patriotic, and benevolent men, would generally prevail over less favored nations.

"Natural selection follows from the struggle for existence; and this from a rapid rate of increase. It is impossible not to regret bitterly, but whether wisely is another question, the rate at which man tends to increase; for this leads in barbarous tribes to infanticide and many other evils, and in civilized nations to abject poverty, celibacy, and to the late marriages of the prudent. But as man suffers from the same physical evils as the lower animals, he has no right to expect an immunity from the evils consequent on the struggle for existence. Had he not been subjected during primeval times to natural selection, assuredly he would never have attained to his present rank. Since we see in many parts of the world enormous areas of the most fertile land capable of supporting numerous happy homes, but peopled only by a few wandering savages, it might be argued that the struggle for existence had not been sufficiently severe to force man upwards to his highest standard. Judging from all that we know of man and the lower animals, there has always been sufficient variability in their

intellectual and moral faculties for a steady advance through natural selection. No doubt such advance demands many favorable concurrent circumstances; but it may well be doubted whether the most favorable would have sufficed had not the rate of increase been rapid, and the consequent struggle for existence extremely severe. It even appears from what we see, for instance, in parts of South America, that a people which may be called civilized, such as the Spanish settlers, is liable to become indolent and to retrograde when the conditions of life are very easy. With highly civilized nations continued progress depends in a subordinate degree on natural selection; for such nations do not supplant and exterminate one another as do savage tribes. Nevertheless the more intelligent members within the same community will succeed better in the long run than the inferior, and leave a more numerous progeny, and this is a form of natural selection. The more efficient causes of progress seem to consist of a good education during youth whilst the brain is impressible, and of a high standard of excellence, inculcated by the ablest and best men, embodied in the laws, customs and traditions of the nation, and enforced by public opinion. It should, however, be borne in mind, that the enforcement of public opinion depends on our appreciation of the approbation of others; and this appreciation is founded on our sympathy, which it can hardly be doubted was originally developed through natural selection as one of the most important elements of the social instincts."

CHAPTER XI.

CHILDREN.

I have now gone over with considerable fulness the subject of sanitary marriage, leaving the subject of parentage for the last chapters of this discussion. It has already been hinted that a physiological marriage has no special significance except as it bears on the improvement of the offspring which may be born of it. It is for this purpose that marriage should mainly be made. And this because it presupposes children; so now comes up the question, are they a good or an evil? are they desirable or undesirable? This question may be answered two ways. Well developed children, healthy children, happy, handsome children, are a good and not an evil; and any person who is not in some degree fond of such, and who does not desire to have them, is defective, mentally maimed, as much as a person would be who has no love for music, art, nature, knowledge; or one who is incapable of distinguishing between right and wrong, or one who cannot feel in some degree sympathy with the pleasure or pain or trials of other people. Accordingly, the cases of

healthy men, and still more of healthy women, who do not desire children are comparatively rare, and they have generally been recognized as instances of a sickly, deformed constitution, or under the baleful influence of unnatural social conditions. The whole range of history, both sacred and profane, the whole range of past and present unperverted human nature, shows a strong love for offspring in the human race. It is true that infanticide has been practised in all ages among barbarous and so-called civilized people; but yet the number of cases in which this is true is, after all, rare in comparison with the cases where it has not been practised; and even when practised it has often been for a love of the child and a desire to shield or save it from the trials of a life which might be an unhappy one. Few, however, are those who do not willingly admit that well developed children are a good and not an evil, a source of happiness and not of misery. Helpless as an infant is, troublesome as are the tricks and naughtiness of children, great as are the anxieties of parents over their children in critical eras of their lives, in spite of all these, and more, a heart without children is generally sad and lonely, and a life without them is felt to be an imperfect life, shorn of one of the most vital and beautiful portions of its enjoyment. And not only are children a direct means of the highest happiness to parents, but they are also a means of improvement. The exercise of so much patience, forbearance, kindness and

love as their training requires, reacts with great force on the heart of the parent. Making provisions for the future of children is a powerful means of restraining the parent from extravagance and recklessness in the conduct of life. Many a man and woman is prevented from evil courses by the thought of how their children will be injured by it. In fact the whole fabric of society is keyed upon these feeble, undeveloped creatures. Remove them and the chief object to marriage disappears at once, and with it disappears the home, the family, and the whole vast circle of forces indispensable to social and national existence. The individual thus loosed stands comparatively without ties to any of his kind, without recollections or anxieties, responsibilities to his fellows, or expectations towards future generations. Our civilization would thus change its whole character, and a body now instinct with healthy life would drop at once into a mere collection of ultimate atoms, with tendencies of which one can know nothing, except that they would be downward toward ruin.

But it does not follow because children are desirable, and a positive addition to the happiness of their parents, that all children are desirable, and that the more of them the better, without the slightest regard to quality. It was stated in the beginning of this chapter that children are a good and not an evil, but it may be more truthfully said that good children are a good and not an evil, and bad children are an evil and not a good. What is wanted.

is more good children and fewer bad ones; and by a good child is not meant one which will become good and learned, and make a name and fame in the world, but one that is healthy and happy, and will shed light and sunshine on its path; and, however humble, fulfil in a satisfactory way the plain, homely duties of life, as well as the higher ones. It is one of the laws of life that each individual shall to a great extent take the benefits and evils of its own nature, no matter whether these come from ancestors by inheritance or are self-produced from habit. A child is entitled to a birth with as few defects of character and constitution as it is possible to give to it. Parents are bound by honor and by their own self-interest, if they bring children into the world, to do it under such circumstances and conditions that their offspring may live healthy, happy, useful lives. To bring children into the world which will be incapable, criminal, or so diseased that their whole lives can be only miserable, is wrong, if not a crime. We want to increase the amount of happiness in the world and decrease the amount of misery. Incapacity of every kind and degree causes both directly and indirectly unhappiness; directly by the great strain it puts upon the feeble faculties in the battle of life, and secondly by the non-fulfilment or imperfect fulfilment of these conditions necessary to comfort and satisfaction in life. So, on the other hand, capacity of every sort, with health, conduces to happiness both directly and in-

directly; directly by the pleasure growing out of the normal play of the faculties, and indirectly by the satisfaction in results achieved.

An animal which is weak or slow, and so cannot secure its food easily, or escape from its foes, suffers, and perhaps loses its life in its effort; while another one, strong and swift, takes pleasure in all its activities, satisfies itself easily and has few pains to bear. The physically and mentally inferior of any race suffers all sorts of privations and miseries. This is equally true of human beings. The healthy and well organized reap the blessings of being so, and the inferior fail to reap blessings, but suffering instead. There are exceptions, perhaps, to this rule, but they are comparatively few.

What is wanted, then, is, as we said before, more healthy, happy, and well organized children, who will grow into men and women full of life and energy; children who can whistle and sing and play all the day long on the smallest provocation; children not weighed down with a load of sadness and sorrow; children light of heart, full of hope, to whom life is a continual delight.

If we had not the highest proofs of hereditary transmission of character from parent to child; if the strong begot the weak, and the weak the strong, the lazy the bright, and the energetic the lazy; if the melancholy descended as a rule from the hopeful, and the buoyant from the depressed; if the intelligent were fathered by the stolid, and the reverse; if there was no such thing

as hereditary transmission of gout, scrofula or insanity, we might ignore all of these conditions. But it is not so; health and capacity are usually transmitted, and so are disease and incapacity. Herbert Spencer says: "When we remember how commonly it is remarked that high health and overflowing spirits render any lot in life tolerable, while chronic ailments make gloomy a life most favorably circumstanced, it becomes amazing that both the world at large and writers who make conduct their study should ignore the terrible evils which disregard of personal well-being inflicts on the unborn, and the incalculable good laid up for the unborn by attention to personal well-being. Of all the bequests of parents to children, the most valuable is a sound constitution. Though a man's body is not a property that can be inherited, yet his constitution may fitly be compared to an entailed estate, and if he rightly understands his duty to posterity he will see that he is bound to pass on that estate uninjured, if not improved."

While well organized children, therefore, are desirable, yet it does not follow that their number should be too great. It is believed that as the nervous system of mankind becomes more developed fecundity will be decreased and fewer children will be born. This is undoubtedly true. It is already shown in our own country as the result of the higher and more general education of women. There are no doubt great evils growing out of this change at present, but these will cease as soon as

our methods of education become improved. If the nervous system is not cultivated at the expense of the other parts of the body, if muscles and vital organs are equally educated, and they will be, no doubt, in the education of the future, dislike for parentage will not be the result of education, as it often is at present. As a rule no more should be reared than can be reasonably cared for and properly started in the world. Physiological and sanitary parentage demands this. It is not necessary that they should have a fortune awaiting them, but it is desirable that they should have a reasonable share of attention, a fair education, and not overburden the parents so as to make their lives miserable. It is to be hoped and believed, however, that in the near future our methods of caring for children will be so simplified and perfected and the parents and children will be so healthy, that they will be reared in reasonable numbers, not only without interfering with parental well-being, but adding greatly to its happiness.

CHAPTER XII.

REPRODUCTION.

In order that there may be a better understanding of the laws of sanitary parentage, it is necessary to consider some of the phenomena of reproduction in the animal and vegetable kingdom. In the different departments of nature this is accomplished by three different processes. The first is by a division of the individual into two individuals, and these again into two others, and so on indefinitely. This is termed *reproduction by fission*, and is best illustrated in that large class of animals known as infusoria. The division may be longitudinal, as occurs in the vorticella, transverse as in the stentor, or both longitudinal and transverse as is seen in the chilodon. The tapeworm also multiplies by division. In the genus syllis, De Quatrefages, who studied it carefully, gives the following observations on their reproduction: "When one of these worms is about to reproduce itself by fission, a number of rings become developed at its posterior end, and there is a notch developed between the first ring and the one in front of it. The first ring soon becomes organized into a head with eyes and antennæ. The two annelids, parent and offspring, continue, however, to be united by skin and intestines

in such a manner that the latter animal lives solely on the food eaten by the former. Each, however, possesses an independent life, and a struggle may often be seen between them, if one wishes to go in one direction and the other in another, very similar to what may often be seen in two human beings united by law but not in tastes and dispositions. After a while complete division is effected and each is free to go its own way, when the younger one, the offspring of the other, grows to the size and likeness of its parent, and acts as its parent acted before it."

The second method of reproduction is a modification of the first, and very similar to it. It is called reproduction by gemmation, or budding. Buds grow out from the body of the animal, and after a while separate from it and grow to the size and form of the parent. In some of the fresh-water hydra, many buds may be seen on the same creature at one time. Generally these buds grow from the outside, but sometimes they grow from the interior of the body. Some animals, as the crab and lobster, reproduce a limb which has been lost, and this is a species of gemmation. Fission differs from gemmation only in the fact of its being an unequal rather than an equal division of the body. Reproduction by gemmation or budding may be easily studied in the vegetable kingdom. Plants multiplying by bulbs are notable examples.

In all these cases of the production of a living being

by division and budding, no influence of sex is required. The part detached does not need fructification by living matter from other individuals, but contains in itself the full power of complete development. Common as this process is with plants and with the lower animals, it becomes rare in the higher ones; at most, the living matter at the end of an amputated limb of some living beings, as the crustacea, can reproduce a lost part; but in the highest animals even this power is lost.

The third method of reproduction is called sexual generation. This consists of the bringing together of living matter under certain conditions from two individuals of different sexes, or from different parts of one individual. One sex furnishes what is called the germ, or ovum, the female element, and the other sex the sperm, or male element. The simplest form of sexual generation is where these two elements are furnished from the same individual, as, for instance, in most plants and in a few of the lower beings known as hermaphrodite, or self-fertilizing animals. The nature of the influence exerted by the male element over the female is quite unknown. Each is, strictly speaking, a small mass of protoplasm or living matter detached from its parent and capable of exerting an influence on the other of a very marked character. Some have contended that the male element acts only as nutriment to the female element, but this is evidently a mistake, for the latter has no power of transforming the former so completely into

itself that its influence may not be marked in the offspring. It is evident that neither element alone possesses the power of full development within itself, for both left to themselves soon die. Brought together, however, they are capable of growing into a living being —great nutritive activity at once takes place, wonderful changes occur, and the embryo is developed. This embryo is received into the bed nature prepares for it, and here for a time it undergoes a process of unfolding. It is not a part of the design of this work to give a full account of the various operations by which all this brought about. For this we must refer the reader to the best works on anatomy, physiology and biology. There are, however, some questions connected with the subject which are particularly appropriate for discussion here. The health and perfection of the child depend largely upon the health and perfection of the two elements out of which it is formed. If the germ and sperm are rich in protoplasm then we may be quite sure the conditions are favorable to a healthy being. If they are poor in this substance, then there is very little living matter present, and we may feel almost certain that the child will be born with a poor constitution. How may this be known? It is not an easy matter to get at such knowledge directly, still much may be known indirectly.

If both parents possess a strong constitution, the germ and sperm will generally be healthy and produce healthy children. If one parent has a strong constitu-

tion and the other a weak one, then the child will generally be strong or weak as it resembles one or the other parent. If the constitution of either parent is in any way, even temporarily, exhausted during the time of generation, then the child will, if it resembles the exhausted parent, suffer. The temporary exhaustion, however, of a parent with a strong constitution is less likely to do harm than in case of permanent exhaustion which occurs in a weakly person. All this shows the necessity of keeping the health up to the highest standard whenever children are begotten. Anything that seriously exhausts one unfits him for the best results of parentage. There is ample evidence to prove this. If children are begotten when the parents are suffering from temporary exhaustion, then they will be born below the standard of health they ought to possess, and it will cost more care and trial to rear them than if begotten when the parents are in high health. A gentleman who has given considerable attention to this subject informs me that he has eight children, and all are healthy except those generated during temporary illness. Another parent, who became pregnant while suffering from malarial fever, says that the child born then was not half as healthy as her other children begotten when she was in robust health. The apparent reason for this is that the sperm and germ elements which go to make up the embryo are temporarily exhausted then. Sometimes, however, children are born of parents whose constitutions are more or less injured,

and yet they are healthy, but there is no certainty that this will be so. During health nearly all the sperm and germ elements are healthy; during disease and exhaustion only a less number of them are so. If these elements could be examined under the microscope there would be seen the same difference between those from healthy and sickly people as between a person in robust health and a pale, feeble invalid.

There is another question to be considered in this connection, of very great importance. Although the constitution may be excellent, any serious temporary aberration from a normal condition is not favorable to sanitary parentage. The first essay in Plutarch's Morals is entitled, "The Breeding of Children," and before he has finished the second page of this paper he says: "The advice which I am in the next place about to give is, indeed, no other than what hath been given by those who have discoursed on this subject before me. You will ask me what it is. 'Tis this: that no man keep company with his wife for issue's sake but when he is sober, as not having before either drunk any wine, or at least not so much as to distemper him, for they usually prove wine-bibbers and drunkards whose parents begot them when they were drunk." Plutarch might have enlarged on this subject and included all those forms of drunkenness and dissipation which are quite too common among many persons with sound constitutions, but who are not trained to live orderly, well-regulated lives.

How is it that this happens? Who can tell? So long as a scientific answer cannot be given, we may be allowed to speculate and form any hypotheses we like. I believe that the elements which go to form the embryo of a human being, the living lumps of protoplasm, receive a bias towards certain forms or modes of action at certain stages of their evolution, and that this may explain why a child begotten in a certain depraved condition of the parents may be depraved itself in the same way. At any rate this explanation may aid us to understand the subject till a better one is given. We know how a musical instrument, played in a room where there are stringed instruments, will set them to vibrating to the same tune; and in the case of the living being this motion, which is, after all, only mode of action, grows into it and becomes a part of its life. In no other way can we explain the mental habits and peculiarities of bodily organization, whether congenital or not, which are seen on every hand. The germs which go to form a human being seem to receive from the parents a "formative capacity," which in a great degree determines the subsequent development of both body and brain and their mode of action through life. The whole question of inheritance is, in our opinion, bound up in these parental germs. So, too, is the whole question of human progress, and the improvement of the race through sanitary parentage, held in the same organisms. They are the seed out of which human beings are grown. The

only way by which this knowledge may be made useful is the fact that they depend upon our health of body and mind and our habits of life, and these are to a certain extent under our control. And thus we are no doubt justified in the thought that as we improve ourselves by perfecting our bodies, and by disciplining our mental and moral nature, we not only benefit ourselves and all those with whom we come in contact, but also the physical, intellectual and moral constitution of our children and their children for ages to come. Is there any other motive by which the highest exertion of our powers may yield such a magnificent reward?

CHAPTER XIII.

HEREDITY.

I CAN do little more in this work than to give a general idea of inheritance and its relation to our theme of sanitary parentage. The subject is too immense for anything else. Great treatises have been written on it, and many volumes by different authors published. My attention was attracted to the subject at a very early age. Two of my boyhood friends were deformed in a very painful manner. So was their father. They had inherited his deformity. Here was a practical illustration of the force of inheritance more powerful than anything which can be said in any book. No doubt every reader has seen similar illustrations. If he has not, he may by slight attention to the subject. The great fact is, we inherit the good and bad qualities of our parents and ancestors before them with modifications, and improvement or degeneration according to circumstances. It would be very remarkable if we did not; yet some things about inheritance are very wonderful and impossible in the present state of knowledge to explain. In a state of undomesticity of plants and animals like begets like with very great certainty. There is scarcely any difference to be seen between the parents and children of

animals in a state of nature. Slight differences do appear, of course, but so slight that it requires a fine discrimination to detect them. The saying that "like begets like" is more true of them than of domestic animals; yet, even in the latter case, it is so true that breeders rely upon it with great certainty. They would laugh at a man who should try to convince them that the force of inheritance had been exaggerated. Mr. Darwin says, "Seeing how hereditary evil qualities are, it is fortunate that good health, vigor and longevity are equally inherited. It was formerly the well-known practice, when annuities were purchased to be received during the lifetime of a nominee, to search out a person belonging to a family of which its members had lived to extreme age. As to the inheritance of vigor and endurance, the English race-horse offers an excellent instance. Eclipse begot 334 and King Herod 497 winners. A cock-tail is a horse not purely bred, but with only one-eighth or one-sixteenth impure blood in his veins. Yet very few instances have ever occurred of such horses having won a great race. They are sometimes as fleet for short distances as thorough-breds, but as Mr. Robson, the great trainer, asserts, they are deficient in wind, and cannot keep up the pace." Mr. Lawrence also remarks, "perhaps no instance has ever occurred of a three-part-bred horse saving his distance in running two miles with thorough-bred racers. It has also been stated by Cecil, that when unknown horses, whose parents were not celebrated, have unexpectedly won great races, as in

the case of Priam, they can always be proved to be descended on both sides through many generations from first-rate ancestors."

It must be admitted, however, that the inheritance of desirable qualities is often feeble and uncertain; so we cannot predict in all cases with positiveness whether a desirable quality will descend or not. If it exists in both parents, and these are of strong constitution, then we may believe that it will. If it exists in only one, and that one is of a poor constitution, then we may not hope to see it in the offspring. Numerous illustrations of feeble inheritance could be mentioned in plants, animals and human beings. The reasons for it are varied. If a character is not fixed in the parent, its transmission is less certain. If the constitution is very weak it is uncertain. Inheritance may also be overcome by unfavorable conditions of life. If we were to turn all our high-bred horses and cattle out on a prairie, who could expect they would continue long to retain their good qualities? So of other animals and of all plants. The moment we alter life's conditions, new forces act upon the organism which seeks to adapt itself to the new state of things, the force of inheritance is changed, and works in a new direction. The individual begins to exercise new functions which are inherited. Functions long disused become less active than formerly, and cease to be transmitted; and so after a few generations the entire character is changed.

I will now consider some of the laws of inheritance

which seem to be quite certain. Males transmit their characteristics to their own more frequently than to the opposite sex. The same is true of females. Consequently, sons are much more apt to inherit from their fathers, and daughters from their mothers, than the reverse. I shall hereafter try to show why this must naturally be so, but a few facts will first be presented. Dr. P. Lucas, who has given much attention to this subject in his "*L'Hered Nat*," shows that when any peculiarity appears in either father or mother it is much the most frequently transmitted to the same sex than to the opposite one. Thus, in the Lambert family, quoted in every work on heredity, the horn-like projections on the skin were transmitted from the father to his sons and grandsons, but to no daughters or grand-daughters. So it has been in numerous other cases of supernumerary fingers, color-blindness, a tendency to hemorrhage and diseases of the skin. Mothers, on the other hand, have been found to transmit certain peculiarities for several generations to their daughters alone. They seem, as Mr. Darwin expresses it, to be attached to one sex, and to be inherited in that sex alone. Dr. Lucas does not go to extremes, and say that fathers never transmit their peculiarities to their daughters, for he gives instances where the male has transmitted his traits to these alone, and also where the mother has transmitted hers to the sons alone, but this is less common. The weight of evidence which he gathered after much research was, that every peculiarity in one sex is

inherited in a greater number by that sex than by the opposite one.

Dr. Sedgewick's investigations, which have been very extensive and thorough, show the same results. Dr. Earle gives a family and their relations, of sixty-one persons, of whom nine-sixteenths of the males and only one-fifteenth of the females were affected with color-blindness, the inheritance being through the male; and another case where a female transmitted the same defect of sight through five generations to females only. Dr. Henry Stewart relates a case of sick-headache being transmitted to all the sons of a family by the father, but to none of the daughters. Dr. Fuchs relates the case of a father and his three sons with dipsomania, but the only daughter escaped. Dr. Gall mentions a Russian father transmitting a love for drink to all his sons and grandsons. Esquiral gives a case of father, son and grandson who committed suicide at the age of fifty, and also of a mother and daughter, each of which became insane at twenty-five. Medical literature is full of similar illustrations.

Mr. Darwin corroborates this idea, and says: "There can be no doubt that peculiarities first appearing in one sex strongly tend to be inherited by the same sex, and are often transmitted in a latent state to the opposite sex."

If we turn our attention to domestic animals we shall find the same results. A notable instance is that of the sheep, in which the male transmits horns to the males,

but rarely to the females. And, we might add, the females transmit to their own sex a hornless condition. My own observations in this field have been limited to the transmission of similarity of form, feature, complexion, and color of the hair. I have found in one hundred and fifty families which I have noted, that in a large majority of cases the daughters resemble the mother more than the father, and the sons the father more than the mother, though there are some notable exceptions to this rule. In one case a deformity of the hands and feet was transmitted to the male children and grandchildren only. The great grandchildren are not born yet, and so no one knows how much farther it will go.

The same law holds good in regard to the transmission of intellectual traits. Francis Galton, in his "Hereditary Genius," has given the results of his studies, and while they relate to only one sex, they are exceedingly interesting. He contrasts the male and female power of transmitting intellectual ability, and finds that in each one hundred cases of very distinguished men, seventy have had fathers of ability, and only thirty mothers. To be a little more explicit: in the cases of eminent judges, the ratio was as 74 to 26; among statesmen, 64 to 36; among commanders, 68 to 32; among literary men, 74 to 36; among men of science, 71 to 29; among poets, 94 to 6; among artists, 85 to 15; among divines, 27 to 73. Mr. Galton chose for his comparisons one thousand of the most illustrious men of all ages. The average, as before remarked, is as 70:30. His

results show that eminent divines have had their ability transmitted very largely from their mothers, the ratio being as 73 to 27. This is in an inverted order, and, if his conclusions are correct, shows that mothers have the power to transmit their piety to their sons more than fathers; but, whether this conclusion would bear the test of a more strict analysis, is not yet known. Mr. Galton's comparisons covers only one-half of the subject. He was simply trying to find out if distinguished men received their talent mainly from father or mother. Had he investigated the other side of the subject, to see if distinguished women received their talent from their fathers or mothers, he would, according to our view, have had his figures completely reversed. He would have found that women of talent received their genius more frequently from their mothers than from their fathers. This seems to be opposed to the common opinion that great men have remarkable mothers, but, after all, if the mother have not a reasonably sound constitution she will not be able to bring forth healthy sons, or great ones, no matter how much ability the father may have. And as sons are largely indebted to maternal influences, so if the mother have not great power over them in this direction, they will not rise so high in the world. If she cannot appreciate the genius of her child, but curbs and hampers it at every turn, of what avail is it that it is born into the world with extraordinary gifts?

Peculiarities of blushing have been inherited according to the same law. A case in point was observed by

Sir James Paget. While examining the spine of a girl he noticed a peculiar manner of blushing. A big splash of red first appeared on one cheek, and then other splashes variously scattered over the face and neck. He subsequently asked the mother whether her daughter always blushed in this way, and she replied, "Yes, she takes after me." Sir J. Paget then perceived that by asking this question he had caused the mother to blush, and he noticed the same peculiarity as he had before observed in the daughter.

Galton mentions a case of peculiar interest. A gentleman of position was found by his wife to have a curious trick when he lay fast asleep on his back in bed of raising his right arm slowly in front of his face up to the forehead, and then dropping it with a jerk, so that the wrist fell heavily on the bridge of his nose, which was prominent, and often became sore from the blows and scratches it received. A son was in after years discovered to have the same peculiarity in about the same degree, and what is here interesting is the fact that this son had a daughter with the same trick, only in a much lesser extent, showing that the father did not transmit it to the daughter so strongly as his father had to himself.

The comparative muscular strength of men and women is very different, and affords a hint that each sex transmits to its own more surely than to the opposite sex. If it were not so—if the daughter inherited from the father equally as from the mother, she would inherit his greater bodily strength, and in process of time both

sexes would be equally strong, but this is not the case. Dr. Janes, who has had large experience in the training of both sexes by the Health Lift, has collected for me statistics of the comparative strength of men and women.

In selecting the cases for comparison, an equal number of each sex has been taken—104 in all. The duration of exercise is in no case less than three months, and varies from that length of time to as many years; care being taken to secure as nearly as possible an equality in this respect.

The greatest weight lifted by any gentleman in the selected list is 553 pounds. The greatest weight lifted by any lady in the corresponding list is 500 pounds; the difference not being as great as might be supposed. But out of 52 gentlemen, 10 have lifted 500 pounds or upwards, while only *two* ladies have equalled that amount; 22 gentlemen have for their heaviest lifts between 400 and 500 pounds, while no other lady has reached a higher ultimate than 360 pounds; 31 ladies and only three gentlemen have for their heaviest efforts a capacity of less than 200 pounds; so that the average of the whole number shows a difference much greater than would be indicated by a comparison of the heaviest lifters. The heaviest lifts of the 52 gentlemen aggregate a little less than 21,000 pounds, averaging about 400 pounds each; while the heaviest lifts of the 52 ladies aggregate but little more than 10,000 pounds, averaging a little less than 200 pounds each.

If this comparison be a just one, it appears, there-

fore, that the average muscular strength of woman is scarcely half that of man; while at the same time there are individuals of the weaker sex who approach much more nearly the strongest among men, and who exceed considerably the average strength of men.

Stepping outside our selected lists for another comparison, we find the heaviest lifts recorded on the records of the Butler Health Lifts to be between 1,200 and 1,300 pounds; while the heaviest weight lifted by any woman has been 740 pounds. It should be remarked that both the men and women who have raised the heaviest weights have been of no more than average size and weight, though of good natural muscular tone, and of enduring temperament.

Physical disease, induced by habitual intemperance, is often transmitted. Alcoholic phthisis is a disease frequently imprinted on the constitution of the unborn babe. Hereditary alcoholic rheumatism and hereditary gout are constantly to be met with. The alcoholic indulgence of the ancestors is transmitted with the rest of the family property. The proofs are everywhere to be seen.

It may be of interest if we try to explain why the fathers influence their sons, and the mothers their daughters most. The embryo is made up of two elements—the germ, or mother element, and the sperm or father element. If the germ element predominates in amount or quality, the embryo grows up after the general plan of the mother, modified of course to some ex-

tent by the sperm element. If the sperm element predominates, then the embryo grows up after the form of the father, and not the mother. Herein lies, no doubt, the law of sex also. Whichever element predominates, either in amount or in force, decides which sex the embryo shall be. This hypothesis has been suggested by physiologists for a long time. Dr. Heitzman suggests further that it agrees with facts and the practice of stock breeders in their efforts to control the sex. The idea is this:—If impregnation takes place soon after menstruation, the germ is much farther up the fallopian tubes, and but a small number of spermatozoa are able to reach it, in which case the child will be likely to be a female. If impregnation takes place later, when the germ is farther down, perhaps in the uterus, then the spermatozoa do not have so far to travel, and consequently a larger number reach it, and, if in sufficient quantities or influence it will probably be a male.

The only fact against this theory is the generation of the common bee. The unimpregnated eggs develope into drones or males, while the impregnated ones become workers, or undeveloped females. I must admit that this is a serious objection, but, perhaps, a different law prevails with bees.

Whether the male may transmit the female sex, and *vice versa*, is not positively denied, only that they do not generally do it. As in each male, the female lies latent, and *vice versa*, so it is, perhaps, possible that this latent sex may sometimes gain power enough to trans-

mit itself. I should not have mentioned this law of sex in this connection, did I not believe that this too is a matter of transmission, and comes properly into this chapter.

Another interesting fact about inheritance is that children sometimes resemble a remote ancestor. We call this reversion. It has no very important bearing on sanitary marriage and parentage, further than this: that if there has been any great vice, such as drunkenness, licentiousness, or a tendency to any disease in any ancestor, say a grandparent or one more remote, there is a possibility of its recurring, though it may not be present in the parent, or have appeared for several generations. The danger lies in inheriting ancestral traits not desirable. No one objects to the transmission of desirable ones in this way. It is wonderful how character may lie latent for a very long time, and then reappear once more. Why it is, is not certain, but we know if the power of transmission becomes weak in a parent, then reversion may occur. The subject, as relating to human beings, is not very well studied, and it is not wise to draw hasty conclusions. Inheritance, at a particular period of life, is a common occurrence. Inherited diseases attack the offspring at the same age the parent had them. In the family of LeComte, reported by Sedgewick, blindness was inherited "during three generations, and no less than thirty-seven children and grandchildren were affected with it, in all cases at about the age of seventeen. In another case the father and

four children, all of which became blind at twenty-one."

Many other diseases produced by alcohol are the subject of transmission. Among the most characteristic are alcoholic cirrhosis and alcoholic contracted kidney.

The blood of the inebriate parent is so vitiated and his energies are so wasted, that even when there is a sober mother the innocent progeny are often brought into existence puny, stunted, and debilitated. Body and brain having been insufficiently nourished, the vital powers of such infants are so defective that, in their earliest years, they are literally mowed down. In the causation of the terrible infantile mortality which is such a disgrace to civilization, the drinking habits of the parent or parents have the largest share. Even when grown up to manhood the constitutions of the offspring of intemperate parentage are frequently so enfeebled and impaired that they succumb to a premature death from their lack of recuperative power after the exhaustion following some acute illness, which a vigorous system would have perfectly recovered from.

Alcoholic nervous and mental diseases are also handed down. Hereditary alcoholic epilepsy, for example, is by no means uncommon. Defective nerve power, enfeebled will, and a debilitated *morale*, form a favorite legacy from thoughtless inebriates to their helpless issue. The nerves of the dipsomaniac are shattered, while the bodily strength is undermined. Some of the circle, generally the daughters, may be nervous and hysterical; others, generally the sons, are apt to be feeble and eccen-

tric, and to fall into insanity when any emergency calls for the display of unusual brain power. In one household, with a drunken father, two girls were hysterical, and a third was an imbecile; of the sons, the eldest was an epileptic, the second died suddenly of alcoholic apoplexy, and the third was an idiot. In another family, burdened with the hereditary drink curse, the eldest daughter committed suicide, the second lost her reason and became quite demented, and the youngest was the incarnation of hysteria. The elder son killed himself by poison through drink, and the younger is an apparently confirmed sot.

The healthfulness and intellectual vigor of children born while the parents were temperate contrasts with the sickliness and mental feebleness of brothers and sisters born after the parent or parents became intemperate. In one case, there were first a son and daughter, both excellent specimens, mentally and physically, of vigorous humanity. After the birth of the daughter the father fell into habits of dissipation, and became an habitual drunkard. He had four children after his declension into insobriety. Of these, one was defective in mind, and the remainder were complete idiots.

Darwin, in "The Botanic Garden," in 1794, pointed out this fixed and immutable law. Nearly all the diseases springing from indulgence in distilled and fermented liquors are liable to become hereditary, and to descend to at least three or four generations, unless the hereditary tendency be starved out by abstinence from intoxicating drinks

Plato referred to the injurious hereditary effects of intemperance both on the parent and on the child. "*Ebrii gignunt ebrios;*" and Aristotle taught that drunken women bring forth children like unto themselves. The Parliamentary Committee of the British House of Commons, in 1834, in their Report on intemperance, declare that the evils of alcoholism "are cumulative in the amount of injury they inflict, as intemperate parents, according to high medical testimony, give a taint to their offspring before its birth, and the poisonous stream of ardent spirits is conveyed through the milk of the mother to the infant at the breast; so that the fountain of life through which nature supplies that pure and healthy nutriment of infancy is poisoned at its very source, and a diseased and vitiated appetite is thus created, which grows with its growth, and strengthens with its increasing weakness and decay."

All the evil resulting from hereditary alcoholism may be transmitted by parents who have never been noted for their drunkenness. Long-continued habitual excessive indulgence in intoxicating drinks, to an extent far short of pronounced intoxication, is not only sufficient to originate and hand down the morbid tendency, but is much more likely to do so than even oft-repeated drunken outbreaks with intervals of perfect sobriety between.

Alcoholism seems to impair the vital properties of the fecundating material, and thus from the very beginning the child of one or two intemperate parents is burdened with an inherited constitutional idiosyncrasy. Then the depraved moral sense is transmitted, just as

are other heritable mental and moral defects. When the heredity is from the mother, it seems to me that it arises mainly from the defective nutrition of the nervous centres of the cerebral and spinal substance, during the entire uterine career. The continued action of nervine stimulants modifies the nutrition of the nervous system, and it is this acquired perversion of the normal nutrition of the nervous system which is conveyed from parent to child and constitutes heredity in alcohol.

The nervous tissues are built up and kept in adequate repair by the nutritive plasma from the blood. This process is essentially a healthy function, the health of the mind as well as of the body depending on the proper nutrition, growth, and repair of the cells. By taking alcohol we cause the blood plasma to convey to the cells an irritant narcotic poison instead of a bland nutritious substance; we stimulate the cells to a rate of waste too rapid for efficient renewal, and thus set up a depraved diseased condition.

Alcohol disturbs the balance of the mental powers. Its action is to destroy the equilibrium of the organic functions of the mind, and by this interference it brings about undue depression of some of the functions, and undue exaltation of others. This abnormal mental unsteadiness produces in the children of such parents a badly-balanced and weakly condition of the brain and whole nervous system, as well as the moral faculties, and thus both the mind and body of the offspring of parents whose mental and physical being is steeped in alcohol

are disposed to take a diseased action. A crowd of nervous disorders is the inevitable outcome. The mortality among children so afflicted is enormous, and when they survive the period of childhood, epilepsy, apoplexy, cerebral and meningeal disease and insanity work sad havoc with the survivors.

"The best hope of the world," says an editorial writer in the *Index*, "lies in the fact that any advantage which men and women, disciplined by the experiences of life, can secure in virtue, they can transmit to their children. The children thus come upon the stage of action better equipped than were their parents to play their parts with honor. It is in this way, by the gradual accumulation of a better mental and moral inheritance, that mankind has advanced from its primitive condition of brute barbarism to its present state of intellectual and moral civilization.

"But, now that this law of progress has been discovered, the advance should be at an accelerated velocity. Human will and effort may co-operate with the law to add to its energy. Here is the crowning problem of social science—so to improve the conditions of human existence that human beings shall be born with a greater advantage in the direction of goodness instead of a proneness to evil. To be born into conditions of goodness is to have good assurance of a good life. And we may say that it is the natural moral right of every human being to be so born.

"But we have only to go into certain districts of any

of our great cities to have the conviction forced upon us that vast numbers of human beings are born into conditions of diabolism rather than into conditions of goodness; into conditions so evil physically, mentally, and morally, that the wonder is rather that any of them should be rescued to useful and virtuous lives than that they should all go to utter perdition of evil. Where physical filth and wretchedness combine with mental darkness and moral depravity of every sort, it does not look as if there was much hope for any new fresh life that is there born. If the life only could come into existence really new and fresh—but it is born already old in misery and vice; that is, in all the evil consequences of them, as if it had itself sinned. That any are saved to virtue from such surroundings, as they sometimes are, shows how persistently vital is the seed of virtue, and how powerful it might become for overcoming all evil, if it were only rightly cultivated.

"Yet it is not wholly in the midst of such outward degradation that all temperamental conditions have their birth. The very seeds that have helped to generate this mass of corruption and wretchedness may have themselves been generated in homes of wealth and luxury. Vicious habits, abuses of appetite, physical and moral violation of natural law—these will inevitably entail upon coming generations the burden of a disordered temperament, whether in the mansion of the rich and mentally cultivated, or in the filthy hut of ignorant poverty and crime. The law of heredity cannot be evaded. No

amount of money can purchase exemption from its authority. No amount of learning can devise any way to circumvent its operation. No amount of refinement can refine away its power. The evil habit, the coarse nature, the selfish ambition, the animal indulgence, the querulous temper, the grasping avarice, under however gilded and reputable exterior they may be concealed, cannot do otherwise than transmit an inheritance of evil to posterity. The evil may not always appear in the first generation, it may in individual cases be cancelled by some other element of inheritance; but somewhere the poisonous evil flows in the blood of after generations, to corrupt and disorder the currents of life. Here it may break out as physical disease, there it may appear as a mental infirmity; and again and more often it may indicate itself in a peculiar susceptibility to moral temptation—sometimes, indeed, as an impulse almost irresistible to certain courses of vice and crime. Thus, in some form or other, it stays as a burden, instead of a help; as something to be striven against and resisted, something dragging the nature down and holding it back from achievements which might otherwise be easy to it. In the light of such a law, how urgent is the motive for uprightness and purity, for moral cleanliness of every form, for temperance, sobriety, and self-control! For in these virtues lie in embryo the clear brain, the pure heart, and the strong-fibred conscience of the generations that are to come.

"But again, on the other hand, we sometimes behold

homes in which goodness seems the natural law of their existence—homes in which a pure and mutually equal and helpful love holds the supremacy over all motives and actions, homes in which truthfulness and sincerity and self-sacrificing devotion of the members to one another make the very atmosphere of family life; homes in which all the generosities and humanities, and all nobleness of feeling and doing, find instant welcome and constant hospitality; homes in which the temperate, easy simplicity in which all things are done detracts nothing from the prevailing good-cheer and joy and healthful pride in one another's success; homes from which all meanness, all impure thought, all intemperate appetite shrink away ashamed and unfed. Here and there, we see such homes, or homes approaching this ideal of goodness. And children that have the fortune to be born there are in very truth born into virtue, into godliness. How easy does goodness seem in these veritable temples of divinity! With what an unconquerable love of virtue, with what strong, well-nigh invulnerable armor, preserving virtue, must children grow up in such homes and go out from them into the world!

"Said a candidate for the ministry to a member of his ordaining council who put to him the usual question, 'Can you name the time when you were converted and came into a state of grace?' 'No; for I was born of a God-loving and God-obeying mother, and so I was born in a state of grace.' The answer was so sincere and truthful, and it opened withal a vista of such glorious

possibility of a larger doctrine of regeneration than the questioner held, that it was allowed to pass. For children born and rightly bred in virtuous homes, under pure parentage, the word regeneration, either in its theological or moral sense, has no meaning. They begin with no depravity, but with a temperament and tendencies that are naturally weighted toward goodness, and can only be prevented from achieving it by some act of unnatural violence."

CHAPTER XIV.

SANITARY PARENTAGE.

THE subject of this chapter is a delicate one, and it will be treated in a delicate manner. Sanitary parentage is of more importance in our age, when a majority of people are living in an abnormal, and often in a seriously unhealthful manner, than it was in the early history of the race.

It may be laid down as a fundamental law of sanitary parentage that the children of those who have obeyed the physical, intellectual and moral laws of their being will not only start from the highest level of their parents in acquired character, but there will be a tendency in them towards an enlarged developement of the best qualities of their nature, so they will, if properly reared, surpass them in many ways, and be capable of taking higher flights in knowledge, and securing higher degrees of happiness. A few suggestions concerning this subject will be given here.

Children should not be begotten when either party is sick or exhausted, so they are not in the full possession of their powers of body and mind. A child is only

a fully developed bud from its parents, and if taken from them while they are in a low condition physically, there may be a great tendency to abnormality in them all through their lives. In all cases of congenital disease we may look to the state of the parents before conception, or to the condition of the mother during gestation for the cause. As children conceived when one or both parents are intoxicated are apt to be idiots, or born with a love for liquor, so may children conceived during illness or exhaustion of the parents, be born with feeble constitutions, and a decided tendency to disease, while those conceived when they are in robust health will be likely to have excellent constitutions and splendid health. Especially is it important that the parents be temperate. Intemperance is evidently a frequent cause of disease in offspring. Doctor Elam states in his elaborate work entitled "Physicians' Problems," that on the removal of the duty on spirits in Norway, the increased consumption of liquor added 50 per cent to the insanity of the country and 150 per cent to the congenital idiocy. Dr. Lannurien, at the head of an institution for mental diseases, attributes a large majority of the cases of idiotcy which have come under his observation to intoxication and intemperance on the part of parents. Doctor Buez states that the miners of Westphalia are forced by circumstances to live during a large part of the time away from their wives; but they return to them on all holidays, when they get drunk, and in this condition generate children which in an unusual number of cases are idiotic.

Dr. Delasianbe informs us that during a period of ten years when the vine disease prevailed in Careme, in France, and spirituous drinks were scarce and too expensive for the poor, that there was a sensible diminution of the number of idiots born. Dr. S. W. Howe found that out of 359 cases of idiots, 99 were the children of notorious drunkards. Dr. Dedmeaux traced with the greatest care the history of 36 epileptics, and found that 5 were conceived while the parents were drunk. He observed two cases of paralysis in the same family, and found the subjects were conceived when the father was intoxicated. In another family a young man tainted with insanity and an idiotic boy were found to have been conceived under the same painful circumstances. These are only a few of the many instances which might be given ; it is too sad a subject to dwell upon. The use of alcoholic drinks has undoubtedly done more to debase offspring and prevent a sanitary parentage than almost any other cause. It is a great risk to run to beget children when the brain and nervous system are debased by stimulating drinks. Then, if at no other time, should the body and mind be in a healthy and sound condition. Even a state of semi-intoxication, common among moderate drinkers, is unfavorable to the sanitary parentage.

The use of tobacco is also a habit which tends to prevent the best conditions for generation. Statistics are yet wanting bearing directly upon this subject, but medical observers are beginning to suspect that many

imperfections in the health and physical development of the young are due to parental indulgence in this narcotic. We know from statistics gathered with the greatest care, that the use of tobacco in early life prevents the best physical development, and hinders moral and intellectual culture. Dr. Coustan's investigations in this field of inquiry have been very carefully made extending to three groups of educational establishments, viz.: primary, secondary, and higher or special schools. Whether the use of tobacco is entirely prohibited or only indulged in surreptitiously, or on going-out days, or any other certain restrictions, and consequently more largely practiced, the figures show that it affects the quality of the studies in a constant ratio; and this influence is more marked in the different establishments where tobacco is more extensively used.

He examined the second historical and philosophical classes in the grammar schools of Donai, St. Quentin, and Chansberry, with a total of 155 pupils, distributed in about equal proportions. The average standing of the non-smokers was 4.8 that of the moderate smokers was 6.53, and that of the heavy smokers 9.35. This shows a very marked and distinct gradation between the different classes, and all in favor of those who smoke the least. Tracing the progress of the same pupil through the different classes he observed that as the propensity to smoke became more marked in any pupil his standing in his class became lower. To illustrate:

B——, a pupil in the second class, session 1876, is

marked as smoking only on going-out days, and ranks number 4. The same pupil passes into the rhetorical class on the following year, and is then marked as smoking both on going-out days and secretly at school, and his standing is now number 10.

F——, in the second class is marked as smoking only on going-out days, and stands number 7; he too enters the rhetorical class, and is observed to become more addicted to the habit. His place in the class is now number 14. The same pupil passes into a higher rhetorical, class, and continues to indulge more extensively in smoking, and now stands number 21.

C——, one of the pupils in the second class, is marked as smoking on going-out days, and secretly at school; his place is number 13. After being removed to the philosophical class he is marked as continuing to smoke on going-out days; the habit grows upon him, and his position now is number 21. One of these young scholars whom he questioned gave a very accurate definition both of the effects and the charm of tobacco in such cases; he said that the cigarette made him dream. In other words, the use of the cigarette intoxicates these students, causing them giddiness, fits of absence of mind, and a dislike to vigorous mental exertion.

Dr. Coustans was furnished with particulars relating to a portion of the classes of special mathematics in the college Rollin; and although the pupils only smoked on going-out days, and the table of comparison comprises but a portion of them, we see the same tendency as shown

above, the non-smokers lose 1.2 in rank, while the smokers lose 2.8.

At the *Polytechnique* (*Ecole Polytechnique*), he made enquiries respecting those promoted during a particular year. He found the use of tobacco to be very general in this institution; and the results, though not embracing the whole of the students, are very significant. The non-smokers had lost 21 places, the moderate smokers 27, and the great smokers 38.

At the Mining school of Donai, he found 8 pupils who did not smoke; 5 of them had gained higher positions, one had kept his place, and only two had lost rank. Out of 13 pupils who smoked, only 3 had obtained higher positions, 3 had kept theirs, and 7 had lost them.

The voluntary recruits belonging to the 14th battalion of light infantry have been grouped as follows during their year of study: non-smokers average rank 15.42, moderate smokers 20.4, great smokers 23.40.

At the Military Veterinary school, at Saumur, out of the pupils promoted in a particular year, the non-smokers take the average rank of 4.6, the smokers 16.7. The Civil Engineering pupils examined showed the following results: The average rank of the non-smokers on entering is 11, on leaving 9; that of the moderate smokers on entering 11, on leaving 15; that of the heavy smokers on entering is 14, on leaving 15. According to the testimony of one of the pupils, there is not much smoking at the school of Civil Engineers; and thus we see that the results, though still characteristic, are little marked.

In two other schools, where the habit of smoking prevails in a still less degree, the difference in rank in proportion to the amount of tobacco consumed becomes still less apparent.

First, at the Primary Normal school, at Donai, the pupils are all very steady young men, intent upon obtaining the diploma, and do not smoke inside the establishment. They have no leave of absence during the year. Those who do smoke are thus exposed to the influence of tobacco only during their vacation. We therefore merely state that the non-smokers gained two places on an average, while the smokers gained only one.

It is the same at the Higher Normal school. Here the young men furnish the "elite of literature and science." With them the love of study is a passion. They possess a well-developed and superior degree of intelligence; the use of tobacco is the last thing they care about. Thus the difference of classification in reference to the habit of smoking are almost unappreciable.

The average rank of non-smokers in this school on entering is 8; their average rank after one year is 9. The average rank of the smokers on entering is 9; their average rank after one year is 10. The pupils in each division have lost one place. We observed, however, that the average rank of non-smokers on entering is 1 higher; this affords, therefore, a negative proof which has its value.

Some striking results are met with at the Naval school, at Brest. This institution is established on board

a vessel moored in the harbor of the town, and exists for the purpose of training officers for the navy. Every year it admits from 40 to 45 pupils by competitive examination, an examination as difficult as that of the Polytechnic school above mentioned. The candidates rank from fourteen to seventeen years of age.

During school term they are completely cut off from all communication with the land, and obtain leave of absence only once a month. But they are allowed to smoke one hour daily; half an hour in the morning, and half an hour at night. Generally these young people, fresh from their grammar school, wish to comport themselves like full-grown sailors. They often climb into the shrouds to smoke a pipe, like the old salts in novels, without knowing whether after smoking it they will be steady enough to find their way down again. We have even known some who chewed tobacco at the age of fifteen.

Taking these habits and the age of the smokers, we infer that tobacco will produce a marked effect upon their physical and intellectual development. Indeed we gather from the table of the class list during a particular year that only four pupils did not smoke. They enter the school with the numbers 4, 12, 31, and 40; after a year's study they stand respectively 1, 2, 31, and 8. The 4 have gained together 45 places, which is a marvelous result.

As to the great smokers, if we take the half included among the first 20, we find they enter the school with

the numbers 7, 9, 10, 11, 14, 16, 17, 20. After a year's study they have numbers respectively 17, 32, 9, 40, 23, 37, 24, 44. The whole 8 have lost between them 123 places.

If we take the whole list, we see that the average rank on entering the school is, for the non-smokers 20.7 for the moderate smokers 22.1, and for the great smokers 33.2. That is to say, the non-smoking pupils have gained 10.2 places, the moderate smokers have gained 1.1 places, and the great smokers have lost 9.4 places.

These statistics concerning the action of tobacco upon the physical and intellectual development are given in considerable detail, because they show beyond question its depressing effects upon students. Its influence clogs all the intellectual faculties, and especially the memory, which is greater in proportion to the youth of the individual and the facilities allowed for indulging. It is perfectly fair to insist that if pupils are thus affected, and their studies thus commenced, the same general effect will be produced upon those advanced in age, and they will be less capaple of becoming parents of the highest order of offspring.

The condition of the mother during pregnancy is another important element in sanitary parentage. It ought to be the best that circumstances will permit. The prospective mother should not live a life of self-indulgence, with no cares, nor, on the other hand, should she be subject to anxieties which may overwhelm her. Dr. Carpenter believes that a continued state of anxiety

and nervous shocks during gestation may cause idiotcy or other diseases in the child. Thus, at the siege of Landan, France, in 1793, there was such violent cannonading that the women were kept in a constant state of alarm. In addition, the arsenal blew up with a terrific explosion, which few could hear with unshaken nerves. The result was, out of 92 children born in that district within a few months, 16 died at birth, 33 languished for eight or ten months and died, 8 became idiots and died before they were five years old, and 2 came into the world with numerous fractures of the limbs. The history of the others was not followed up, but it is doubtful if they escaped without injury, though it may have been of a more trifling nature.

The case of one of the kings of England is equally interesting. The murder of David Rizzio was perpetrated by armed nobles, with violence and terror, in the presence of Mary, Queen of Scotland, shortly before the birth of her son, James I., of England. The liability of this monarch to emotions of fear is recorded as a prominent characteristic of his mind; and it has been said that he would shudder at the sight of a drawn sword. Queen Mary was not deficient in courage, and the Stuarts, both before and after James I., were distinguished for this quality, so that his disposition was an exception to the family character.

The case of Napoleon is often cited, and it is interesting at least. The father possessed a handsome person, had a talent for eloquence, and a vivacity of intellect

which he transmitted to his son. It was in the middle of civil discord, flights and skirmishes, that Charles Bonaparte married Lætitia Ramolini, one of the most beautiful young women of the island, who possessed a great deal of firmness of character. She shared the dangers of her husband during the years of the civil war, and is said to have accompanied him on horseback on some military expeditions, or perhaps, short, hasty flights, just before Napoleon was born. The supposition is that the child inherited from these circumstances at least that portion of his character which gave him such a love for war and conquest.

Napoleon and James form striking contrasts, and it may be remarked that Napoleon's mother seems to have risen above the danger to which she was exposed, while Queen Mary was placed in circumstances calculated to inspire her with fear alone.

History furnishes other cases of equal interest. Esquirol, a famous French writer, mentions that many children born when the horrors of the French Revolution were at the highest turned out to be weak, nervous and irritable, and liable to insanity. A medical man, on the isle of Man, mentions a case of a father whose first child was of sound mind. Afterward he fell from a horse and his brain was injured. Two children born while he was in this condition were idiots. Then by a surgical operation he was restored, and a child was born of sound mind. A mother writes: "I read the 'Iliad' for six months before my child was born and he is ac-

tually like Achilles, so restless that I fear he is ruined for life."

The prospective mother who constantly gives way to her feelings, hurts her unborn child. If she would have brave, courageous children, she must at least try to be so herself. The bravery and courage, as also the timidity and cowardice, that she manifests, will, to a certain degree, be photographed into the nervous tissues of her offspring, never to be eradicated. There they may grow and reproduce themselves along the line of posterity for many generations, blessing or cursing as the case may be. Self indulgence may be equally injurious. It is fatal to the development of the highest manhood and womanhood, and why not equally fatal to the bearing of the noblest children.

The subject of prenatal culture is one of great interest, and one on which there is much diversity of opinions and much needless confusion of thought. In the first place it is pretty well established that the imaginings, longings, and fancies of mothers during pregnancy, do not have so much influence on the child as has been believed. If they did, this would be a very poor world for prospective mothers. Scarcely a child would escape. It would be unsafe for the mother to go out of doors at all if all the superstitions concerning the effects of what she may see were likely to come to pass, and equally unsafe for her to stay at home. The origin of these beliefs go back into the days of ignorance, and are only being gradually dispelled by the light of later-day knowl-

edge. Millions on millions of mothers have had longings, and pictures of the things longed for have not been found on the bodies of their children. Millions more have had imaginings that did not produce the effect predicted. Dangerous frights may do harm for they shock the system and cause partial arrest of development of a grave character, and for this reason they had better be avoided, as indeed had all bad mental influences; but if the come, it is wise to cultivate a philosophical spirit and think of them as little as possible, or what is better, think of something else, and thus keep at bay unpleasant broodings. It is, however, undoubtedly true that cheerful, healthful influences are not only desirable, but produce a favorable influence. They make the mother happy and healthy, and in this state the child is better nourished, and inherits from her better health and better prospects. If the mind is properly occupied with high and noble aims, and the body kept in high health by her manner of living, it certainly may be very advantageous; but this will hardly be the case unless preparation has been made for it by a judicious early education. If the energy and perseverance and power of imaglnation, and all the robust virtues are developed in a high degree during the earlier years of life, the children of such persons will be more likely to be benefited by it, than by any spasmodic effort that is made in later years when the heart is not in the work.

The number of children which may be born in the sanitary marriage is a question which will not be an-

swered here; each married must pair settle it in accordance with circumstances and desires. No doubt as the nervous system of man becomes more cultivated, the number of offspring will diminish. This is already the case with the inhabitants in the Northern and Eastern States; the whites are increasing by births less rapidly than is the case in Southern states, and the blacks in the latter region are gaining on the whites rapidly, although this ignorant race lose more offspring by early deaths. If our system of education were such as to make the cultured classes more vigorous in body as well as more intellectual, they might bear as many offspring as the less cultured, but until this is the case they cannot. This may be said, that the number of children born in the sanitary marriage should not be so great as to injure the health of the parents, nor more than can be properly supported and educated. Some parents are very prolific, and may bear many without injury; others are not, and must bear fewer. The great point is to bring into the world only the best children, without regard to numbers.

The best age for parentage is also a subject of interest. It is a curious fact that the largest number of imbecile children are born of very young or very old parents; that is of those whose bodies and minds are not yet matured, or of those who are worn out and exhausted in their physiological capital. It is also equally true that the most capable children are born of parents in the prime of life, when the physical and intellectual powers are at their best. Francis Galton, in his valuable work on

"English Men of Science, their Nature and Nurture," has given the following facts bearing on this point. "Out of one hundred cases of scientific men who had attained high distinction, none had fathers and only two had mothers under twenty years of age. One had a father who was twenty, and twenty had mothers of this age. Fifteen had fathers and twenty-six had mothers aged twenty-five. There were thirty-four who had fathers and mothers aged thirty, there were twenty-two who had fathers and twelve who had mothers aged forty. There were seven who had fathers and one who had a mother aged forty-five. Four had fathers who had passed their fiftieth year

"Putting these facts together, viz: First, older sons appear nearly twice as often as younger ones; Second, as regards intermediate children, the older and the younger boys of the family contribute equally; Third, that only sons are as common as oldest sons, and we must conclude from this that the age of parents within the limits with which we have to deal has little influence on the nature of the child, consequently that the older sons have on the whole decided advantage of nurture over the younger ones. They are more likely to become possessed of independent means, and therefore able to follow the pursuits that have most attractions to their taste. They are treated more as tenants by their parents, and have earlier responsibility, and by that usage is developed independence of character. Probably also the first born child of the families not well to do in the world would generally have more attention in his infancy, more breath-

ing space and better nourishment, than his younger brothers and sisters in their several turns. An unusual number of the mothers of the scientific men were between thirty and thirty-four at their birth. This is a very suitable age, according to Aristotle, and undoubtedly older than what Dr. Duncan's statistics in his work on "Fertility" recognize. According to this, the most favorable period for the survival of mother and child, and probably the best in every sense is when she is twenty to twenty-five."

This question of age within certain limits seems to be less important than that of health, which in the parents of distinguished men appears to have been very high, so that here again we have evidence of the great value of this possession and the danger to the continuance of the race in any high degree of perfection when it is not present.

It is an important matter in the rearing of children to have them born in a healthy place. The parent who is depressed by a malarious atmosphere during the years of child-bearing cannot become the progenitor of so fine children as the one living in the bracing air of a salubrious region. In the onward march of the race this question receives far too little attention. Climate, soil and surroundings have an almost unlimited influence on population, as any one can see by studying this subject ever so little. Some climates breed a lax, miserable race, and others a population of fine proportions. Those living in healthful country towns where, there is

considerable moral, intellectual life, and where every one is industrious, are most favorably situated in this respect. So long as we have large cities children must and will be born in them, but a large city is not the best place for their health. The nervous system is too much occupied with the multitude of trivial sensations which play upon it in a city for its best development, and after the children are born they have, as a rule, a worse chance to grow up than in the country. For this reason, at least, life in a very large city is objectionable, but the same rule does not apply to so great an extent in small cities, where life is more rational and healthful.

Sexual expenditure is a subject which bears in a very important manner on sanitary parentage. The strength of the constitution is lowered by the excessive expenditure of force and matter requisite for the perpetuation of species. In animals generative expenditures is kept within reasonable limits by certain limitations, and this is a safeguard which prevents expenditure from rising above a certain limit. With them the male and female come together only at certain periods, and there are long intervals in which there is no expenditure whatever, during which time physical vigor is maintained at a high standard. With human beings, however, the case is very different, and generative expenditure is almost continuous except when held in check by reason and judgment. It is an interesting question why man is less favorably constituted in this respect than animals, and it is difficult to find a rational

answer. It would seem as if this enormous loss of energy must be very disadvantageous to him, and there can be no doubt but this is the fact, and nowhere would this disadvantage show itself more clearly than in the generation of offspring. So far as the excessive expenditure of force is concerned, its evil effects would be shown in lowering the standard of health and transmitting this lower standard to children. There can be little doubt but this is one of the reasons why so many healthy parents beget weakly children, who die early. They have exhausted themselves of the material from which a new life is created, and so it is not properly started in its beginning and never reaches its highest development. Especially is it important that generative excitement in the female should not be continued during the months of pregnancy and lactation. The injury which is often done at this period by this means is very great. Here the females of the animal kingdom have had great advantage over the human female, and the latter may learn an important lesson from the former if she will. There is little doubt but much of this excessive generative expenditure in the human race is the direct result of the more stimulating foods and drinks consumed. Among animals food and drink are productive of less passion than in man. They live simply and as nearly naturally as is possible, and generally give birth to healthy offspring, which man does not. It is neither necessary nor desirable that human beings should imitate the animals below them; they have a

wide range of wants and must gratify them. But artificial and unnatural wants may well be laid aside; they give no added pleasure to life and only shorten it, and render those who indulge less fitted for their duties and their work, whether it be parentage or something else.

In reference to reproductive expenditure during pregnancy, Dr. Perrin speaks with great force when he says: "Our great master, Hippocrates, thought that pregnant women who abstained had easier labors; Galen dwelt upon the liability to abortion from this cause at certain periods of pregnancy, the fruit more easily detached when more tender, and when approaching maturity, so that the Christian Fathers had good authority for their injunction of continence in the early part and toward the end of pregnancy.

"The fact that abstinence from physical love in pregnancy is the common rule of animals is certainly a strong argument in favor of urging similar abstinence on the part of men.

"Furthermore, practitioners are sometimes told by innocent husbands—more rarely by wives who so often suffer in silence—that intercourse causes the latter great pain.

"Finally, this is a frequent cause of abortion; at least one-half of the causes of what is termed spontaneous abortion probably are thus produced. Summing up the arguments in the affirmative of the question, it may be stated that indulgence in pregnancy is unnatural; so

far as woman is concerned, it is generally odious, often painful, and in regard to the newly-created being frequently murderous.

"What can be alleged on the other side? The peace of families and the chastity of husbands are secured by the indulgence. But suppose men were trained to believe that such indulgence is wrong, injurious to others and to themselves, would their amiability and chastity require to be purchased by a momentary pleasure? Would they not rather learn to subdue and rule this otherwise imperious passion? If Newton, Kant, Fontanelle and Beethoven could live their many honored years with no indulgence of passion surely other men might abstain without injury.

"The ungoverned passion of man is prolific of evil, and, like producing like, the father who has never learned self-control may give his son not only form and feature, but the germ of the same fierce, clamorous desire, which in its full development will prove a heritage of woe to that son and others. That which polite language veils under the designation, social evil, and which desolates so many happy homes, and brings its quick, black harvest of misery, remorse, disease and death, chiefly lives because man does not know aright, does not duly reverence and honor woman, and keep in subjection that which may become one of the monster passions in his heart, and is thus continued from generation to generation.

"Surely prospective motherhood, woman within whom

proceeds the evolution of the marvelous mysteries of creation, should be reverenced, as worthy of all thoughtful consideration, and ought to have thrown around her all protective care. The woman who has conceived is enceinte; that is, ungirdled—in allusion to the ancient custom of laying aside the girdle when pregnant and placing it in the temple of the gods—at once a preparation for the enlargement of the abdomen and a seeking of divine protection. Let her not fail of all human care while in this condition.

"Nature then offers unto man invitation and opportunity to subordinate passion to reason, to conscience, to will, to a higher love, and thus raise himself above himself.

"A sensual age claims that indulgence facilitates parturition, and the most sensual of husbands finding their wives pregnant very much against their wishes, will claim that they can now indulge freely and without fear, for matters can be no worse!

"We do believe that intercourse in pregnancy has nothing to commend, nothing to excuse itself unto wise men, and that virtuous abstinence on the part of the husband will be a blessing both to him and to his wife and to their posterity. It may be objected that the abstinence here advocated contradicts almost universal practice, a practice that frequently brings no evil. But how do we know it has no injurious results? Admitting that the wife may in the majority of cases not patiently suffer, have no miscarriage, no pain, no nausea and

vomitting increased or excited thereby—is there no violence done to the finer elements of a refined womanly nature? Does such a woman cheerfully accept it as the way of all, like Hiero's wife who never perceived her husband's offensive breath, imagining that it was common to all men? It seems that there might follow some lessening of mutual love, respect and reverence.

"So far as the husband is concerned he learns no lesson of self-control, attains no self-mastery in this regard, and mars that ideal manhood which, in better hours and with nobler aspirations, he seeks to attain.

"As to the other objection, no matter how universal a practice is, if it be wrong, at least endeavor to point out the wrong. Whether I judge from observation, from the great doctrine of evolution which so fascinates the age, or from the power of divinely-revealed truth, the conclusion always is that the world grows better, and that a wiser, higher, happier, nobler generation will one day possess the earth. Each evil pointed out, each wrong discovered helps the progress to that day, although it may be long before the evil and the wrong cease. Meantime it is a great mistake to accept a popular vote as the criterion of wisdom and right. Possibly physicians are too reticent in regard to these matters; do not consider as fully as they ought the connection of these with human health and happiness, and give that instruction to the people which is so much needed. Believing this, I can say, in the words of Montaigne, 'I know very well that few will quarrel with the license

of my writings who have not more to quarrel with in the license of their own thoughts.'"

The effort to produce abortion in any stage of pregnancy is not compatible with sanitary parentage. If not successful it is pretty sure to injure both embryo and the reproductive organs, and prevent a perfect growth. In this way there is no knowing how much injury may be done, or what sort of character may be produced. Some of the most wayward persons I have ever known were born of mothers who tried unsuccessfully to destroy them before birth. One was the child of a mother who did not know she was pregnant; her physician did not suspect it, and her efforts to bring on menstruation continued till the period of quickening, at which time the mistake was discovered, but quite too late to rectify the injury. This child, now a woman, is one of the most disagreeable of characters, has no kindly feeling for her parents, is in no way equal to either of them physically, intellectually and morally. Such additions to the worlds population are not desirable. They cost more to rear; they give more pain and trial and return little pleasure to their parents and friends. Another still more painful case is that of Guiteau, the assassin of President Garfield. He illustrates not only the law of heredity, but also the evils of attempting to produce abortion. His father was a man of considerable intellectual ability, of integrity of character, though there was evidently an insane neurosis in the family. His children were born in quick succession, and the mother, who

was in poor health, was obliged to work harder than she ought to do for lack of means to procure competent help. Before this child was born she resorted to every means in her power with patent drugs to produce abortion though unsuccessfully, and for several weeks during the latter part of pregnancy had brain fever, which probably caused an arrest of development of some part of his brain. When it at last came into the world it was weak and puny, and for many months its life was one continual wail. Months elapsed before its nervous system became at all quiet. His whole life has been full of contradictions. There has been little self-controlling power in him, no common sense, and not a vestige of remorse or shame. In his imagination he believed himself capable of doing the greatest work with no means, and of filling the loftiest stations in life. It is not to be doubted that his mother's efforts to destroy him while in embryo, and her illness, had something to do in degrading him to the low level of an egotist and an assassin. Had his parents known and applied the laws of sanitary parentage to the production of their offspring, this child would not have been born; or born would have possessed a better organization, and perhaps become a useful member of society.

There are a few occupations which are unfavorable to sanitary parentage. Of these I will mention labor in factories, shops and stores. The girls and women who thus work for small wages, and are obliged to live on meagre food, are not likely, when they become wives,

to bring into the world so large and robust children as those whose labors are more unconfined. It is doubtful if a manufacturing population can, without greater attention to sanitary laws, maintain as good a physique as is necessary for the best parentage.

Society life is also unfavorable to parentage. Those, however, who devote themselves to it are comparatively few, and so less harm is done; still these ought to become the mothers of nobler children than they do.

The profession of a teacher has some advantages and some disadvantages. If followed too long it is apt to weaken the constitution, and unfit one for the duties of a parent in proportion to the harm it does to the body. On the other hand, good teachers generally make good fathers and mothers, for they are fond of children, and this is of the highest importance.

It may be laid down as a law that any occupation which injures the health and dwarfs the body and mind has an unfavorable influence on parentage. Degrading and unnatural occupations of whatever kind are open to the same objections.

I must not omit to speak of dress in this connection. It is a powerful agent for health and may be an equally powerful one in the opposite direction. In the latter case it will be an enemy to sanitary parentage. That beautiful flower of humanity, the Greek race, had one great advantage over the moderns in the healthfulness of their dress, and this may be a reason for the physical and intellectual superiority of their children. The chief

and indispensable article of female apparel was the *chiton*, which consisted of only one piece of cloth sewed in the form of a sack, open on the top and bottom, reaching from the neck to the ankle, and in width as far as the extended arms, which could not be less than six or seven feet. Within this roomy sack stands the human female figure, free and unconfined in every movement. It was girt loosely round the body under the breasts to keep it from falling. The upper edges were fastened together on top of the shoulders by a brooch, and the arms were either left bare, pressing down into the folds of each side, or these masses were gathered around them and fastened by buttons or loops so as to form sleeves. The chiton could be left open on one side for convenience in dancing. To secure greater warmth over the chest and shoulders the chiton was made longer and doubled back from the top, so as to make several thicknesses. A simple band of cloth was worn under the chiton to support the breasts, but this did not descend so low as the waist. Round the loins was worn a sort of petticoat, something like our modern bathing costume, only not so long. These were all the articles necessary for in-door wear. For out-of-door wear, women had the *himation*, made of woollen and worn round the shoulders, somewhat like a Scotch plaid. It was first thrown over the left shoulder, leaving the short end to hang down in front; the long end was then brought round the back with the right hand, then under the right arm and across the body in front, and finally held in this position by

being thrown over the left forearm. Or, instead of being passed under the right arm it could be thrown over the right shoulder, so as to envelope the right arm, then be carried closely around the neck and thrown over the left shoulder with an end hanging down behind. In this costume, which, during gymnastic training and labor was greatly simplified, the Grecian female developed those splendid bodies which served her so well in rearing the magnificent human beings which for ages have challenged attention and admiration from the civilized world.

Of all parts of the body the soft moveable walls of the chest, and the still more soft walls of the abdomen, if they are to perform the important purposes for which their peculiar structure is designed—digestion, respiration and reproduction—must suffer no constriction. Circular compression here diminishes the area occupied by the important organs and prevents the flow of blood in them, and renders them lax, weak, and incapable of good work. The framework of the chest is an admirable complex arrangement of bone and cartilage, joined together in such a manner as to allow of expansion and contraction for respiration—a function so essential to life and health. It has been reserved for modern times to invent a style of dress for squeezing together and rendering partly immobile the most important part of the human frame, and this custom flourishes in our day, often greatly to the injury of the child while it is a part of the mother. The corset, which is, no doubt, the in-

vention of the evil one, has done a great deal to distort the beauty of woman's form and render her offspring feeble and effeminate. During pregnancy, and in fact all through the years of growth and previous to marriage, it had best be entirely discarded. The dress should be such as to give warmth and protection and not in the least interfere with the motion of the body and the circulation of the blood. One evil arising from clothing which may constrict the movements of the chest, and especially breathing, is the limiting of the amount of air taken into the lungs. The growing child is nourished from the blood of the mother, but not from pure arterial blood. It is a mixture of arterial and venous, and contains a lesser amount of oxygen, of course, than it would if it was all arterial. For this reason, if for no other, the amount of pure fresh air taken into the lungs should not be diminished by any artificial means, but rather the reverse.

Exercise for prospective mothers is essential quite as much as food, but severe exercise may prove injurious. The lighter occupations of housekeeping are suitable, and special exercises by some form of gymnastics are also often very useful, provided always that they are rightly taken. It has been a mooted question whether a woman who expects in a few months to become a mother should do any labor. Nothing could be worse for her than to be idle or exclusively confined to sedentary occupations. It were better to overwork than to uselessly while away the hours. Labor keeps the mind

from hurting itself by friction. Every day should have its occupations, both physical and intellectual, otherwise the faculties of body and mind become palsied and imperfectly nourished, and the person deteriorates and gives birth to deteriorated offspring.

The subjects of food and bathing have been so fully discussed in a little book entitled, "Parturition without Pain," that I must refer the reader to this work for full particulars on these subjects. I will only say that the sitting-bath for fifteen minutes during pregnancy, at a temperature which is agreeable, to be taken before bedtime, with friction at the same time over the back and abdomen, and the use of a diet in which fruit takes a prominent place, have done much to mitigate the pains of childbirth, and, in addition, improve the health of the mother and the beauty and strength of the child.

The prospective father has duties equally important in sanitary parentage. The husband cannot be unkind and untrue to the wife in these trying months without sinning against her and the child. It is his duty to provide her with a home and its comforts, and make that home not only pleasant but a delightful place. He must see to it that she has her real wants supplied, and he must help to protect her from bad habits and bad ways by good judgment and wisdom. Thus the two will work together for the good of the *one* as yet unborn, which is of their flesh, and will bless or curse them as they have been wise or unwise in procreating him.

INDEX.

PAGE

A beautiful face not sufficient 53
A beautiful woman marrying a rich old man 84
A blighted life 42
A blind Stallion's colts 37
Abnormal life 142
Abundant protoplasm necessary 116
Abundance of beauty in Sparta 55
A crime to bring sickly and imperfect children into the world . . 109
Advantages in having two sexes 13
Advantages of the rich 92
Age of the parents of the best men 156
Age of love 18
Alcohol impairs the vital properties of the fecundating material . 135
A low state of health unfits one for parentage 117
Albites on Health, Beauty and Grace 33
A man who married an insane wife, and the children . . . 83
Aiming at family improvement 86
Ancient Peruvian laws and customs 6
An easy life causes a retrograde movement 105
An extract from George Darwin 87
An extract from Francis Galton 126
An ancient belief that man was once hermaphrodite . . . 12
An interesting case of heredity 121
A peculiar case of blushing in a mother inherited by a daughter . 128
A peculiar trick of the father inherited by a son and daughter . 128

PAGE.

A physician's counsels not always safe 42
A quotation from Darwin 122
Arrest of development in Utero 154
A sedentary life injures offspring 65
As is the mother so will be the child 56
A sanitary marriage can take place only between healthy persons . 40
Athletes and gymnasts 46
Average stature of men and women 64
A woman who married a deformed man, and the children . . . 84

B

Beauty of Kaffir maidens 7
Beauty and strength the Spartan standard of excellence . . . 53
Bakewell's method for securing early maturity 70
Bad children a curse 106
Bad children not desirable. 108
Beecher's thoughts on ill health 33
Beginning of legitimate marriages 4
Best age for begetting children 64
Benefits of civilization to the human race. 94
Blending of physical and mental culture 51
Blindness inherited 132
Brave men must have had brave mothers 56
Bachelors of a certain age shut out of society in Sparta . . . 57
Born in a state of grace 140

C.

Cases of males transmitting their characters to daughters and the reverse 124
Cases of sick headache transmitted to sons by father, but not to daughters 125
Changed circumstances of life change the character . . . 69
Characters transmitted in a latent state 125

PAGE.

Checks to propagation of the inferior 101
Children 106
Children starting on a level with their parents may surpass them . 142
Children born during the horrors of the French Revolution . . 152
Children rightly born do not need regeneration 141
Children may resemble a remote ancestor 132
Children prevent recklessness and extravagance in parents . . 108
Children should not be begotten during an illness 142
Children conceived when parents are intoxicated often idiots . . 143
Children begotten during a condition of exhaustion . . . 117
Children of short lived parents 92
Children begotten by drunkards 118
Children entitled to be well born 109
Children of a syphilitic father 42
Cicero on confering health on men : 33
Cities not the best places to rear children 158
Colts from stallions with diseased limbs 37
Comparison of the wild boar with the present domestic one . . 68
Choosing a rich husband in preference to a healthy one . . . 39
Choosing a sick but rich wife in preference to a healthy one . . 39
Courtship in Bengal 8
Cowardice of mothers photagraphed on their children . . . 153
Condition of mothers during pregnancy, and its effects on offspring 148

D.

Danger from frights 154
Dangers in reversion 132
Dangers of blending races of opposite tendencies 74
Darwin's reasons for two sexes 13
Daughters of the wealthy as mothers 65
Debilitated morale 133
Defective nerve power 133
Defective children destroyed in Sparta 57
Definition of the word health 31

PAGE

Degrading effects of misery 70
Degeneration through want of care 91
Delay of marriage a disgrace to maidens in Bengal 8
Development of savages 72
Difficulties in the way 83
Diseased generative organs a hindrance to a sanitary parentage . 12
Dissimilarities of faith 19
Disgraceful scenes at wedding festivals 6
Diseases most likely to be inherited 44
Dishonor from divorce 5
Domestic labors of Spartan women 55
Duties of Greecian wives 50
Duty of the weak to refrain from marriage 91
During a scarcity of spirituous liquors in France there were a less number of imbeciles born 144
Dress and parentage 166
Dr. Lannurian's observations 143
Dr. Perrin's opinion concerning reproductive expenditure during pregnancy 160
Dr. Sedgewick's investigations 125
Drunken women and their offspring 135

E.

Early marriage of the reckless 97
Early marriages in Great Britain 4
"*Ebrii gignunt ebrois;*" 135
Effects of a constant state of alarm 152
Effects of the use of tobacco on the nervous system illustrated . . 145
Effects of a poor constitution 123
Effects of ignorance on marriage 3
Elimination of bad characters 96
Elimination of the weak 90
Eminent men without children 95
Emerson on health 32

PAGE.

Enfeebled will 133
Enslaved women do not make good mothers 56
Epileptics often conceived during drunkenness 144
Equality necessary to perfect marriage 19
Esquimaux borrowing wives 10
Esquimaux marriages usually contracted in infancy . . . 9
Esquimaux wives, cheapness of 9
Esquimaux marriage relations purely matters of convenience . . 9
Esquimaux trading wives 10
Esquimaux courtships 9
Eradicating disease from plants and animals 35
Evils from stimulating food 159
Evils of anxiety if long continued 150
Evils to children from moderate drinking by their parents . . 135
Evils of alcoholism cumulative 135
Evils of primogeniture 93
Exercise for prospective mothers 169
Excessive expenditure of generative force unfavorable to parentage. 159
Extract from Herbert Spencer 111
Experts for selecting sheep for breeding purposes in Germany . 70
Exceptions 43
Excess of physical culture 46
Extremes of belief objectionable 19

F.

Feeble inheritance 123
Feeble girls could not deceive Spartan boys 57
Females transmit their characters to their daughters more strongly than to their sons 124
Few children of the profligate 98
Food and parentage 170
Formative capacity of germs 119
Fragmentary marriages 19
Freedom of love 21
Free men must have free mothers 56

PAGE.

G.

Good children a blessing 106
Grecian beauty not considered a snare of the devil 54
Grecian diet 50
Greek children educated for the State and not for their parents . 49
Growth and decay of the body 31
Guiteau and his mother's prenatal condition 164

H.

Happiness of parents of good children 167
Harmony of the temperaments 22
Heredity 121
Hereditary intemperance 130
Herbert Spencer's reasons for two sexes 12
Heavenly bodies consulted 8
Health as a factor in sanity marriage and parentage . . . 31
Health of Spartan women 55
Helen's beauty at fifty 56
Healthy men in Sparta compelled to marry 57
Health and great performances 32
Health makes men bold 32
Heredity among the Jews 39
Haeckel's laws of inheritance 77
How the Greek women dressed 167
How a family may maintain its integrity through successive generations 77
How divergence of character may arise 71
How a perfect animal is bred 67
How Spartan supremacy fell 60
How Spartan bachelors were punished 58
How Spartan boys and girls were educated 54
How Greece lost her greatness 51
How persons with feeble constitutions may improve them before marriage 44

PAGE.

Homes of goodness and beauty 140
Human progress not uniform 102
Hysteria in a daughter may come from a father's intoxication . . 134
Hyperides defending a beautiful woman 54

I.

Importance of having children born in a healthy place . . . 157
Influence of a highly developed race on a low one 74
Injurious influence of the former policy of the Church . . . 75
Intermarriage in small towns 82
Intermarriage between invalids a crime 41
Intermarriage in the small states of Europe 78
Influence of food and education on improvement 69
Injury to the health of the race done by medical men . . . 86
Introduction 3
Injury to the race by vaccination 90
Intellectual vigor of the children of the temperate 134
Inheritance of disease in the line of the same sex 125
Injurious effects of effort to produce abortion on the child . . 164
Insanity begotten when father is intoxicated 144
Injury from a standing army 92
Irregularity of life bad 119
Immagining, longings and frights 153

K.

Kaffir maidens testing the courage of their suitors 7
Kaffir courtships 7
Knowledge of the temperaments essential 23

L.

Life growing more complex 45
Like begets like, a rule of action for breeders 122

PAGE.

Loneliness of a life without children 107
Longings not often transmitted 154
Love, its nature 20
Love no sanction for unsanitary marriages 41
Love, complex nature of 20
Love, selfish nature of 20
Love not sentiment 18
Love among animals 18
Loves of plants 18
Loves in the material world 18

M.

Marriage and parentage 3
Mating in the Animal Kingdom 3
Marriage practices among ancient Mexicans 5
Marriage a complex matter 4
Marriage of relatives 81
Marriage for money 84
Marrying with strangers 77
Match makers employed 6
Males transmit their characters to their own sex most strongly . 124
Man need not imitate the lower animals 159
Miners of Westphalia beget many idiots and the reason for it . . 143
Mothers of the strongest children 65
Mothers anxiety for their daughters 8
Marriage, bases of 18
Marriage improves as civilization advances 10
Modifications of marriage by the Church 5
Mortality in early marriages 99

N.

Napoleon and King James contrasted 152
Napoleon Bonaparte and his parentage 151

PAGE.

Nature of sexual generation 115
Nervous disorders handed down several generations . . . 133
Nobleness in improving offspring 120
No immunity in the struggle for existence 104
No adultery in Sparta 59
No looseness of morals between the sexes in Sparta . . . 58
No marriages of convenience in Sparta 57
Nonprolific families 65
Necessity of unity and variety 18

O.

Objections to marrying an heiress 69
Occupations favorable to sanitary marriage 165
Occupation necessary for prospective mothers 154
Occasional instances of hermaphrodism 12
Origin of the word health 31
Old Testament lessons 71
One sided investigations 127
Our deficiency of physical training 51

P.

Parental relation to the education of Greek children . . . 49
Partnership of wives in early times 4
Perfect health rare 41
Perfection of child dependent on the germ and sperm . . . 115
Physical vigor of Kaffir youth 7
Physical diseases that are inherited 130
Physical training of Greek girls 49
Physical culture among the Greeks 46
Physical culture and sanitary marriage 46
Played out families 41

PAGE.

Plato on exercising the mind and the body 33
Pleasure in ownership between lovers 21
Power of parents to compel daughters to marry 5
Propagating disease 86
Principles which have always guided breeders 69
Prospective mothers should not give way to their feelings . . 153
Prof. Riley on health 34
Protoplasmic waste 31
Profligate women 96
Prenatal culture 153
Putting more thought into marriage 39

Q.

Quotations from Ecclesiasticus on health 33

R.

Rams transmit horns only to the males 126
Racers with impure blood rarely win 122
Repair of the protoplasmic loss of the body 136
Reasons for feeble inheritance 123
Reproduction 113
" by division 113
" by fission 113
" by budding 114
Rear no more children than can be cared for 112
Rearing a happier race 89
Restricting the liberty of marriage 89
Resolute men generally have resolute mothers . . . 56
Reasons for permanent marriages 14
Rejection of feeble or lame suitors by Kaffir girls . . . 8
Ruskin on health 34

PAGE.

S.

Sanitary parentage 142
Sanitary marriage among the Spartans 53
Sanitary marriage continued in Sparta for 500 years . . . 58
Science applied to improving animals, plants and man . . 61
Scarcity of sickly girls in Sparta 57
Scrupulous care of Greek children 48
Scientific breeders reject many animals for breeding . . . 38
Scarcity of living matter in old people 31
Sexual generation 115
Selection of the most beautiful women . . . 93
Sexual expenditure and its relation to sanitary parentage . . 158
Self fertilizing animals 115
Secular and consanguineous marriages forbidden by the church . 5
Shakespeare's estimate of virtue of strength . . . 33
Simplest form of sexual generation 115
Sir John Seabright's care in deciding the merits of animals for breeding 70
Sickly men in Sparta could not marry 57
Sickly animals unfitted for breeding good stock . . . 34
Sickly people a dead weight on the healthy 32
Skill required in selecting good breeders 38
Slight differences between parents and offspring in animals in a state of nature 121
South American marriages in ancient times 6
Society life and parentage 166
Spartan education prevented deception between the sexes . . 56
Spartan girls could not marry young 57
Spartan methods of securing usefulness in education . . 54
Spartan fondness for beauty 33
Spartan worship of beauty 53
Spartan system of morals 53
Strong men generally have strong mothers 56
Strong constitutions give healthy germs 116

PAGE.

Stearne on health as a golden treasure 33
Superstitious beliefs 153
Sweetness of temper of Spartan girls 55
Sympathy for the weak may do harm 91
Systematic care of breeders in selecting animals . . . 66
Syphilis a bar to marriage 42

T.

Teaching and parentage 166
Tendences to abnormality transmissible 143
Temperaments, what are they? 22
Temperaments, number and variety of 22
Tempermental adaptation 22
The fathers' duties 170
The number of children which my be reared 154
The case of one of the English kings 151
The siege of London and its effects on the children born after it . 151
The tobacco habit unfavorable to sanitary parentage . . . 144
The law of heredity cannot be evaded 138
The fundamental law of sanitary parentage 142
The best hope of the world 137
The drink curse 134
The transmission of talent 126
The probable laws of sex 131
The law of sex in the honey bee 131
The Lambert family 124
The laws of inheritance 123
The phenomena of reproduction 113
The healthy and strong my reap life's blessing. . . 110
The benefits to parents through their children . . . 107
The love of offspring 107
The struggle for existence forces man upward . . 104
The comparative strength of men and women . . . 128

PAGE.

The blood of the inebriate 133
The case of Priam 123
The deterioration of animals and plants, if without care . . 123
The sperm, or male element 115
The germ, or female element 115
The retrograde of the Greeks 102
The able bodied succeed best 93
The best age for procreating children 155
The propagation of imbecility 79
The spirit of persecution and its influence on the race . . 76
The mixing of races 73
The law of variability 69
The law of heredity as an element of success in breeding . . 69
The examination of animals, both alive and dead, with reference to breeding 68
The parentage of Thomas Andrew Knight 62
The beautiful Helen 55
The duty of philosophers and statesmen 52
The great schools and gymnasiums 46
The objects of Greek education 48
The blood of invalids 41
The farmer's method of improving his fruits and grains . . 35
The temperate should not marry the intemperate . . . 19
The professional match-maker 8
The duality of the sexes 10
The objects of marriage 12
The next step 12
The Bengalee groom no choice 8
The strict fidelity of wife exacted. 5
The lessons of history 4
Times when wives were bought 5
Thomas Andrew Knight as a pioneer in improving animals and plants 61
Thoughts from Dr. Nichols 38
Too many children not desirable 111

PAGE.

Too rapid increase of the race 104
Transmission of form and feature 126

U.

Unhealthful occupations and parentage 166

V.

Value of bravery and courage in mothers 153
Variety in knowledge desirable 19
Valuable suggestions about temperamental adaptation . . 24
Value of health in animals used for breeding purposes . . 35
Views of Charles Darwin 90

W.

We inherit the good and bad qualities of our parents - - 121
What is health - - - - - - - - 31
What Plutarch said - - - - - - - - - - 118
What is inherited from the female - - - - - - - 63
What is inherited from the male - - - - - - - 63
What the highest lady in Sparta did - - - - - - 55
What is a good match? - - - - - - - - - 39
What a sick man owns - - - - - - - - - 35
What a well man owns - - - - - - - - - 35
What was Greek education like - - - - - - - 45
What Eric can do when in robust health - - - - - - 32
What a good constitution means - - - - - - - 31
Weak children cannot fight life's battles - - - - - - 110
Weak digestive organs and marriage - - - - - - 43
Wife punishment - - - - - - - - - - 5
Winners of races and their offspring - - - - - - 122
Wonderful progress of the United States due to natural selection - 103
Why sons inherit most from fathers - - - - - - - 130

PAGE.

Why daughters inherit most from mothers - - - - - 130
Why bad habits in the parents injure the child - - - - 119
Why the Spanish race has been distanced - - - - - 102

Y.

Youthful sports are only natural methods of physical culture - - 46
Youthfulness of the Bengalee bride - - - - - - 9
Yucatan customs - - - - - - - - - - 6

Made in Italy